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POSTWAR SOLDIER SETTLEMENT

SUMMARY

Scope of the paper, 1. — Historical background, 2. — Experience after World War I: United States, 4; Canada, 6; Australia, New Zealand, United Kingdom, 8. — Resettlement and rehabilitation in the United States: unemployment, 9; rural distress, 10; the Farm Security Administration projects, 11. — Other FSA opportunities: rehabilitation loans, 16; tenant purchase loans, 16. — The new legislation: Canada, 17; New Zealand, 20; United States, 20. — Limited value of certain provisions of the "G. I. Bill": present owners, 22; prospective tenants, 24; prospective buyers, 24. — The legislative background: United States, 27; Canada, 28. — Need for soldier settlement, 29. — Loan values, 31. — Tenant purchase as an alternative, 33. — Concluding remarks, 34.

The seventy-eighth Congress of the United States, in Public Law 346, technically designated as the Servicemen's Readjustment Act of 1944, popularly known as the "G. I. Bill," approved June 22, 1944, provides that any veteran with the necessary "ability and experience" who selects himself a farm on which there is "reasonable likelihood" of success may, if he can find a willing lender, have a loan to buy a farm, or livestock or machinery, or to erect or repair farm buildings, underwritten up to half its amount, the guarantee not to exceed $2,000. The Canadian government passed its Veteran's Land Act in 1942, and New Zealand acted shortly afterwards. What other countries have passed or plan to pass such legislation, the authors have not undertaken to discover, but no doubt there are several of them.

The administration of the Servicemen's Readjustment Act of 1944 is placed in the hands of the Veterans' Administration. Its predecessor, the Veterans' Bureau, had charge of the veterans' settlement program that followed the last war. By 1925 very few of the subjects of that ill-conceived and ill-fated effort were still on the land. The Canadians did much better — more than two-thirds

of the veterans handled under its 1919 Soldier Settlement Act were still on the land six years after the war, and nearly a half twenty-five years afterwards. United Kingdom, Australian and New Zealand experience was more like that in the United States.

The new legislation is said by its proponents in this and other countries to avoid the mistakes made after the last war. It is the purpose of this article to consider the nature of the problem of veteran placement on the land, the provisions that are needed to make such placement successful, the adequacy of the Servicemen's Act of 1944 and how to apply it to make it best serve the ends desired, and finally to assess the merits and shortcomings of this and other pending and proposed veteran land-settlement measures. In connection with this analysis, the authors will draw upon the extensive experience which this country has had since 1933 in attempts at settlement and rehabilitation under the Subsistence Homesteads Act, the Resettlement Administration, and its successor the Farm Security Administration.

HISTORICAL BACKGROUND

Soldier land settlement did not, of course, begin with World War I. The Roman precedent for it is not without interest today. Caesar's successors during the Empire carried the practice of rewarding veterans by grants of land to greater lengths even than he, and conquering or victor nations since then seem usually to have done what the Romans did. To most of them, as to Caesar, placing soldiers on the land combined a "logical" and an obvious solution of several problems. The soldiers had helped to conquer the territory; why not give them a piece of it? Moreover, who would better defend and preserve it than a body of landholders who had just won it in battle? The returning soldiers seem always to have been a social problem. Especially were they a problem after years of continuous war. To give them land and get them away from the centers of political strife was good strategy. Giving them money could only be a stopgap, anyway; and besides, the governments were usually in financial straits after a war. If the war lasted more than a year or two, it was an easy step to begin offering land as an inducement to enlistment.

Another aspect of the subject, we shall have occasion to note later, has a still more familiar undertone. While the men of Rome were away fighting for long years, agriculture decayed — espe-

cially did the number of small independent landholders decline. Several explanations have been offered for this — we will not go into them. Getting these lands back into smallholdings again, with veterans as the operators, seemed to be a solution for this problem too. Accordingly, some whole communities were made veterans' settlements. The poet Virgil, so the story runs, had to move to make way for one of these settlements.

With most of a continent open to conquest and exploitation, what more natural than that the colonial governments of North America, and later the United States, should give their lands as bounties to returning soldiers, and presently offer land as a reward for enlistment. As early as 1679, Virginia made grants to get land settled by men able to defend it. George Washington went down the Ohio River in 1770, and staked out a 200,000 acre tract that was to reward an expedition of 200 men into the wilderness. Land bounties were given to soldiers after King Philip's War and after the French and Indian War — 50 to 5,000 acres, according to rank, in the latter case. The Continental Congress, and some of the colonies, promised bounties of land for military service during the Revolution. The military land-bounty acts of 1811–12 set aside a special Military Tract between the Illinois and Mississippi Rivers.

At this stage, however, a new element entered — speculation in land. Most of the bounty land in the Military Tract had before long passed into the hands of members of Congress, high officials in the army, and other large speculators. The nation was so anxious to push its frontier westward that it had begun distributing land far in advance of settlement. It became still more liberal with its grants after the Mexican War, and by 1855 any veteran of any war from the Revolution on, or his heirs, could obtain a warrant for 160 acres of land anywhere in the surveyed public domain. Few veterans, however, actually moved onto their lands. Warrants were bought and sold freely on the eastern markets at prices from 30 cents to $10 per acre. Land speculation had figured importantly in the excesses that preceded the panic of 1837. It rose to another height in the 'fifties, and played its part in the collapse of 1857.

For this reason, but more because of Southern opposition, public policy then sharply reversed itself. In June, 1858, the government stopped issuing military land warrants, and the right to obtain them expired with the passage of the Homestead Act in 1862, which required five years of residence on the land, or the

payment of $1.25 per acre. Ex-soldiers, however, were allowed to substitute military service for residence down to a minimum of one year. A good many soldiers took advantage of this provision shortly after the war, and more became settlers during the severe depression years after 1873. Now appeared in an important way for the first time the notion of getting people "back to the land" as a solution of unemployment. In 1877 three bills were introduced into Congress proposing to assist the unemployed in getting out of the cities onto the land. None of these bills was passed, but with each recurring business recession the number of homestead entries increased. The homestead laws were presently modified to allow 320 and 640 acres of grazing land.

EXPERIENCE AFTER WORLD WAR I

By the end of the first World War, very little good farming land was left in the public domain. Nevertheless, Congress and the public did discuss proposals to help veterans obtain farms; and if there had been severe unemployment in 1919, Congress probably would have hurried through some vigorous measures. In February, 1919, it passed laws not only assuring veterans the general rights of homestead entry on newly opened public land, including Indian reservation land, but also giving them a 90-day running start on all other entrants. Then in 1922 the veterans were allowed to substitute their time of military service for residence requirement.

More important than these public-land provisions for veterans after World War I were two other developments, in the main new to the United States. The first was that three States — South Dakota, Oregon and California — extended credit to veterans to enable them to buy land. In South Dakota, the credit took the form of a joint loan from the state rural credit board, secured by a second mortgage. In Oregon, the soldier's welfare board made loans up to $3,000 and 75 per cent of the purchase price of the land, on a 28-year amortization basis at six per cent interest. The California loans could go as high as $7,500.

The second development was an importation from Europe, patterned after the smallholdings programs of Denmark, Germany, England and several other countries. There the objectives had been to convert tenants and farm laborers into landowners. The method was to purchase large estates, subdivide them, build the necessary farm buildings, schoolhouses, roads, etc., and sell the

farms thus created on long-term payment plans. These European programs achieved the end of greatly decreasing the amount of tenancy. The holdings resulting, however, are pretty small, and their mortgage obligations have been reduced very little from one generation to the next. In 1918 Secretary of the Interior Lane proposed a similar program for the returning soldiers, but Congress and the public were not ready for it. Secretary Lane's own State of California did adopt the suggestion to the extent of buying land and laying it out in a colony.[1]

It remained for the Rehabilitation Division of the Veterans' Bureau really to try out the smallholdings and colony idea. The Veterans' Bureau was given responsibility for vocational guidance of disabled soldiers and sailors. In connection with this, it undertook, very wisely, to retrain them for all sorts of occupations. Some of these trainees wanted to go into agriculture. In fact, three types of agricultural employment were provided for in the training program: (a) scientific and technical agricultural occupations, (b) agricultural industry and trade, and (c) agricultural production — that is, actual farming. The senior author, then in charge of agricultural economics teaching at the University of Minnesota, helped plan and conduct the training for a few score of men for the first two of these employments. The subsequent records of the men so trained have been excellent.

Those wanting to go into farming had the disadvantage that in most cases they had no farms of their own. The Veterans' Bureau undertook to supply this deficiency by buying tracts of land, laying it out into farms, and selling it on long-term payments — after the European smallholding pattern. The men were kept in school only till their farms were ready, and given the rest of their training under a leader on their projects. The training included not only technology, but record-keeping and budgets. Credit was advanced also for enough livestock and equipment to enable the veterans to begin farming.

Unfortunately, no public reports have been made which show what happened on these projects. The annual reports of the Veterans' Bureau show only the number of persons in all the rehabilitation programs combined at different periods. The peak was reached in April, 1922. The numbers fell off rapidly after that, and by the end of 1924 the training programs had been in large part termi-

1. See Elwood Mead, *Helping Men Own Farms*, New York, 1920.

nated. By then most of the veterans had found employment in expanding industry and trade.

The senior author assisted briefly in a study of three of these projects in Minnesota in the winter of 1922-23. He prepared two reports on his study, a confidential one for the guidance of those in the Veterans' Bureau in charge of the administration of soldier settlement projects, the other a report that could be (and was) used as testimony in the hearings then being conducted on charges of maladministration in the Veterans' Bureau. The soldier settlement projects were under attack. In his confidential report, the writer predicted that within a year from the date when the training period allowances were cut off, most of the men would leave the projects. The forecast proved to be correct. Within a few years, only a handful of veterans were still living on them. The reasons for it were, on the one hand, that the income from their small-scale farming operations would not support their families at the level to which they had been accustomed while on training allowances, and, on the other, that most of them could get jobs in cities that would. Moreover, two of the projects were on new lands in cut-over areas, and the delights of modern civilization were not readily at hand. The third was a poultry-farming project near Minneapolis, which had very great accessibility to city delights, and also to city occupations.

The cut-over farms were small in the first place — around 40 acres — and only part of the land was cleared in advance. The poultry farms were planned for 1,000-1,500 hens. A million or so of farm families in this country then had incomes less than these farms afforded; but they had grown up with them, and had become inured to them by generations of squalid living. These veteran families had not been so inured, and they did not propose to become so. They appealed to Congress when they were told to get ready to take care of themselves shortly (except for the disability allowances which many of them had), and moved to other employments when they were taken off training.

Not all the projects had exactly this same experience. A few of them fared appreciably better, and a few families in a number of them stuck to their holdings and made a good record. But the Minnesota experience furnishes a good sample of the whole.

The Canadian soldier settlement program was more ambitious, and appears to have come much nearer to being a pronounced

success. No doubt some will insist that it really was a success. Around 24,000 veterans were placed on farms, and twenty-five years later 11,000 of these, or their families, were still on their farms. The 13,000 others had either voluntarily abandoned their farms, or their agreements with the government were cancelled by the government because of unsatisfactory performance, or they had died and their families were unable to carry on under the agreement. In 1943, about half of the 11,000 had completed their payments to the government and had obtained titles. The rate of repayment has accelerated since the outbreak of the war. The government's original investment in the scheme was $109,000,000. To this must be added the administrative costs and considerable unpaid interest. Against these costs and losses are actual recoveries of $76,000,000 and book accounts conservatively valued at $20,-000,000. The net cost to the government should not, however, be charged against only the 11,000 settlers who paid out their contracts or are still in process of doing so. Mr. Gordon Murchison, Director of the Canadian Soldier Settlement and Veteran's Land Act, is on solid ground when he writes as follows:

> The real test of state-sponsored land settlement is also found in the number of veterans who make use of land settlement as a stabilizing factor in giving them an opportunity to get their war experiences out of their systems; and if they are not temperamentally or otherwise adapted to agriculture as a lifetime occupation they can use land settlement as a springboard into other trades or occupations when the best available opportunity presents itself. It is true that those who decide not to remain permanently in agriculture cause considerable waste motion on the part of the administration, and considerable loss to the public treasury, if the success of the operation is gauged only by the cold figures of an orthodox balance sheet; but, on the other hand, there is an asset in having these citizens soundly integrated into some other part of the national system where they become quite successful. This was the essential feature of the operations under the Soldier Settlement Act of 1919.[2]

The loans to Canadian veterans for land settlement averaged $4,300 per settler. The maxima were $4,500 for the purchase of land, $2,000 for the purchase of livestock, and $1,000 for buildings and improvements. The veteran was required to make a cash payment of 10 per cent of the purchase price of the farm, and to maintain his family till returns came in from the land. In 1922, however, interest charges were waived up to a maximum of four years. The first soldier settlement legislation in 1917 was directed at the

2. From a letter dated August 29, 1944.

Crown lands in western Canada. The 1919 law permitted settlement in suitable areas anywhere in Canada. This made necessary the purchase of farms in the eastern provinces. The holdings purchased or established on Crown lands averaged around 200 acres.[3]

Under the Australian program, the central government furnished the money for loans, and the individual states the lands. The emphasis was on smallholding types of enterprises, like pig raising, and on coöperative buying and selling. The New Zealand program provided a wider range of farming opportunities, including fruit-growing and sheep-raising, and loans up to £750 in special cases.

Nothing prevented the grouping of the veterans into colonies under the Canadian program, but clearly this was not an essential feature of it. The same was true of the Australian and New Zealand programs. The program developed in the United Kingdom was conceived mostly in terms of settling veterans on smallholdings, but two kinds of colonies were also organized in a small way. On one type, the estate purchased for this purpose was subdivided, after a probation period, into smallholdings operated under the supervision of a director who also continued to operate a central farm. On the other, each veteran was allotted only a cottage and garden land, and worked for wages, plus a share of the profits, on the one big farm.

There is not much more that can be said about these several soldier settlement schemes. One can read the laws under which they operated, and descriptions, usually rose-tinted, of their organization and early operation. But no one has yet written the accounts of their dissolution or of their absorption into their communities. Those in charge have apparently had no desire to supply posterity with a record that all might read. Perhaps the following sentence from the Annual Report of the Director of the Veterans' Bureau (1923), except that it applies to soldier rehabilitation in general, may serve as a general obituary notice for all of these ventures: "The history of rehabilitation activities has been the story of a nation's generosity to its disabled veterans unsurpassed in any

3. See E. J. Ashton, "Soldier Land Settlement in Canada," this JOURNAL, Vol. XXXIX (1925). Dr. Robert England writes that 1528 of these veterans have retired their loans in full since the outbreak of the present war. Dr. England discusses soldier settlement in Canada in his recent book, *Discharged, a Commentary on Civil Reëstablishment of Veterans in Canada,* Toronto, 1943,

country or at any time" (p. 392). This does not mean, however, that even more generosity, but of a better sort, was not warranted.

Resettlement and Rehabilitation, 1930–44

The full historical record from the Rome of Caesar through the last postwar, or, more narrowly, from the Revolution onward in this country, shows certain major shifts. The first is from major emphasis on getting conquered lands occupied and defended toward getting the returning soldier or sailor a farm, if he wanted one. Accordingly, after the last big war, Canada, the United States, and several other countries helped the veterans to obtain farms outside the public domain, as well as within it. This meant the substitution of liberal credit for a gift of land. The second change is the recognition that if the veteran is to succeed as a farmer, he must have buildings, livestock, and equipment as well as land, and this meant still more credit. The third is the acceptance of the idea that the serviceman, especially if he has been disabled, may need retraining or reconditioning for farming, or for that matter, many other occupations. Fourth, is the attempt to fit the European smallholding program to the needs of veterans. The last three of these developments mainly followed the first World War. Fifth, the placement of veterans on the land as a way of taking them out of the breadlines in time of unemployment. This dates back to the post-Civil War period. It did not figure importantly in soldier settlement activities in the 'twenties. It came out strongly in the depression of the 'thirties, for veterans and for workers generally. (We must not entirely forget about the Bonus Army.) And it has contributed to the new 1944 legislation for veterans.

The contribution of unemployment to the resettlement program, initiated soon after 1933, and the related rehabilitation program, and the background which these furnish for the administration of the Act of 1944, need also to be examined briefly. The movement to relieve unemployment by moving families out of the cities was started as early as 1931. Hearings were held the following winter by the Labor Committee of the House on a bill with this object sponsored by Mr. Bernarr McFadden, who had been running a series of articles and editorials on the subject in the magazine, Liberty. Mr. McFadden had been maintaining a soup kitchen in New York City, and was tiring of it. It was a committee created at Mr. Roosevelt's suggestion, consisting of Senator Bank-

head, Mr. Hugh MacRae (of Castlehaines, South Carolina), Mr. Bernarr McFadden, and Dr. Alvin Johnson, which drafted the original form of the Subsistence Homestead Act passed in 1933.[4] Mr. M. L. Wilson, the first administrator of this Act, was a strong advocate of part-time farming, and at least a moderate proponent of back-to-the-land for the unemployed, but he had ideas about several other kinds of resettlement that were needed. The forty-five projects which he approved, before resigning within a year because of irreconcilable differences with Secretary Ickes, in whose department the program had been placed, represented a wide range of groups and conditions: a combined factory and garden project for Jewish needle workers from New York City; farms for mountaineers whose land had been enclosed within Shenandoah Park; and part-time farming plots for coal miners in Iowa, and for urban workers on the outskirts of Birmingham, Alabama. It was Mr. Wilson's idea that the limited fund of $25,000,000 should be used to test out a wide variety of projects and hypotheses. On perhaps eight it was assumed that the families would make most of their living at farming, on thirty-seven, that they would make most of it outside of agriculture. In effect, virtually all of them proved to be part-time farming projects, because of underestimating the amount of land needed; and perhaps it is better to call many of them simply housing projects, since most of the families that settled on them did very little farming.

Not all of the hardship cases in the depression of the 'thirties were in cities. A million or more of farm families were in desperate condition because of the droughts of 1933 and 1934, or because of the very low prices of farm products in 1930–32, or because they had lost their part-time jobs in industry. The Emergency Relief Administration (hereafter referred to as FERA) had undertaken to care for these, along with destitute city families, by outright grants. But presently it came to be realized that many of these farm families needed only loans until they could grow a new crop, or could get some more livestock, or until prices recovered. Accordingly, loans came to be substituted for grants in many cases, and the term "rehabilitation" came to be applied to these loans, borrowed, perhaps unconsciously, from the experience with the disabled veterans of World War I.

4. The senior author was designated as a member of the committee, but had nothing to do with the drafting of the bill.

For many of these families, it was agreed, making them a loan was useless as long as they continued farming on land that was too poor, or too nearly arid. For these the Land Policy Section of the AAA developed its submarginal land-buying program. Mr. Roosevelt indicated that he would make $40,000,000 available for this purpose. Between December, 1933, and April, 1934, a total of $103,390,000 was available for this purpose from funds of the Emergency Public Works Corporation and Drought Relief Funds. The funds that had been voted for relief had so few restrictions upon them that they could be used for almost anything that would contribute to relief. The Comptroller's Office of that time, however, ruled that buying submarginal land was going too far. In March, 1935, $50,000,000 of these funds were withdrawn. But subsequently Mr. Roosevelt made $20,000,000 available out of funds of the ERA Act of 1935. Actually, therefore, $48,930,000 was provided for the purchase of land for resettlement purposes. The buying organization that was created when the larger funds were available took options on over five million acres of land in the Great Plains alone. In the final count, options were taken on 9,734,000 acres, but the $48,930,000 available actually brought only two-thirds of the land optioned.

Buying these submarginal farms, however, was not enough — what was to become of the farm families? The Subsistence Homesteads could receive only a few of them. The fact is that, although there was much discussion of resettling these families, little was actually done. Something in the nature of a resettlement program did begin to evolve, however, and in 1935, a Resettlement Administration, (hereafter referred to as RA), was created under the direction of Dr. Rexford G. Tugwell. This agency and its successor in 1937, the Farm Security Administration (hereafter referred to as FSA), eventually set up one hundred fifty resettlement projects (in addition to the forty-five Subsistence Homestead Projects transferred from the Department of Interior). The funds available for these projects were the Subsistence Homestead Funds and transfers from the appropriations for emergency relief. In most of the States, the FERA had set up a state Rural Rehabilitation Corporation and given it a quota out of the national relief grant. When these corporations became inactive with the organization of the FSA, they were allowed to retain their funds, and these were drawn upon for settlement projects within these States. In a report

prepared by it for the use of the Cooley investigating committee in the summer of 1943, the FSA classified its 195 projects according to the agency originating them as follows:

Subsistence Homesteads	45
RA	77
State Rural Rehabilitation Corporations	65
FSA	8
	195

The same report also classifies the 126 developed projects (other than Subsistence Homesteads) into 62 *community* projects, with 4,766 family units on 369,000 acres, and 64 *scattered-farm* projects, with 4,842 family units and 522,000 acres. The first ideas of the resettlement administrators ran very largely to colonies where the families could have the advantage of a community life and could buy and sell and own equipment coöperatively. The studies that had been made of land settlement in the Department of Agriculture by Dr. L. C. Gray and others had shown, however, that in actual operation the settlers made the most progress who had taken up holdings within, or on the edges of, already established communities.[5] They had found roads already built and schools and other institutions already established. Dr. Gray's group brought these judgments with them when the Land Policy Section was transferred from AAA to RA, and they induced Dr. Tugwell and his group to include scattered farms, or "infiltration" projects, as well as colonies.[6] Of the 62 community projects, only 19 were definitely coöperative in over-all administration, and part of these were leasing associations — that is, associations in which the families jointly took over the lease of a plantation and then operated it as individual farms.

These projects had been under some form of attack almost from the inception of the program under Subsistence Homesteads auspices. The opposition grew steadily, and in 1942 Congress

5. John D. Black and L. C. Gray, Land Settlement and Colonization in the Great Lakes States, U. S. D. A. Bulletin 1295 (1925); W. A. Hartman and John D. Black, Economic Aspects of Land Settlement in the Cut-over Region of the Great Lakes States, U. S. D. A. Circular 160 (1931).

6. Later Dr. Gray's group was transferred to the Bureau of Agricultural Economics, and thence to the Soil Conservation Service. It had a land purchase program of its own, the object of which was to recondition the land and reorganize it into feasible economic operating units. Its first grant for this purpose was $25,000,000 in 1936.

voted that they all be closed out and the farms sold, except for those that could properly be transferred to other agencies. A year later the FSA reported that 42 had been transferred to the National Housing Agency and one to the Interior Department, that 26 of them were undeveloped projects, and that selling was under way or completed on 72 of the remaining 126. But this was not fast enough to satisfy Congress, and the FSA was vigorously attacked for its delayed action in the 1943 hearings on its annual appropriation. The Cooley Bill now awaiting action by Congress provides for a continuation of the rehabilitation loan program, and the Tenant Purchase program, but asks that the "Farmer's Home Corporation," which under this bill is to take over the FSA, "do all things necessary to complete the liquidation as expeditiously as possible of all resettlement projects," including most of those transferred the year before to the National Housing Agency.

The reasons for what has happened to the resettlement projects are all important for soldier settlement. These projects are being closed out because:

1. Most of them were not very successful. The reasons for this were:

(a) They were started in a period when agriculture was relatively depressed. There was a period of good recovery in 1935–37, but it was short-lived. The year 1939 was only a little better for agriculture than 1935. By 1942 a majority of the families on the projects were doing pretty well, but the opponents of the program had already won their battle.

(b) Very many of the holdings would not yield enough income to support a family and make payments against the advances. They were too small or the land was too unproductive. They were "smallholdings," not family farms.

(c) Not enough industrial and other employment was within reach to provide supplementary income.

(d) When such employment was available, too many of the farmers neglected their farming. Part-time farming — that is, combining two ways of making a living, one of which is farming — although highly esteemed by a small percentage of the population, does not prove in practice to be acceptable to the rest. Given a chance for a full-time job, they let their farming subside. Left to themselves, many families drift into part-time farming by one course or another; but *selecting* families to make a successful part-

time farming colony is extremely difficult. One can expect the turn-over to be large at the best.

(e) The administration of the resettlement program as a whole did not measure up to the requirements of such a difficult under-taking, and the management of some of the individual projects was altogether inadequate. One reason for the inadequacy of the hand-ling of the subsistence homestead projects and some others was their transfer from agency to agency, with drastic changes in policy in some cases. Another was a considerable lack of practical sense in many places in the administration organization. Inex-perience was to be expected — only a few people in the United States had tried their hands at this sort of thing; but there need not have been so much ignorance and naïveté. An example of this quality in the management was the expectation of some of the administrators that these families, without any previous experience with it, would at once fall into a coöperative mode of economic functioning. The resemblance is strong between some of the RA coöperative projects and those of Palestine, and perhaps some of the leaders were influenced by that experience. Furthermore, the personnel of RA was drawn in part from the NRA, which was being closed out at about the same time. Evidence as to the truth of these statements is furnished by the fact that the government's invest-ment in the average farm sold up to the summer of 1943 was $6,600, whereas the selling price was $3,700. Only a fraction of this dis-crepancy is explained by the employment of a good deal of WPA labor on the construction work on these projects.

2. The public was allowed to obtain a wrong impression as to the nature and objectives of the projects. The popular notion of them was that they were all highly coöperative ventures, if not communistic, and that one of their main purposes was to substitute state landlordism for private ownership of land. The reasons for this false impression were partly that the more novel of the projects received most of the publicity, and that important staff members of the Resettlement Administration insisted on talking about the program as if its objectives were to remake agriculture according to a more communal pattern. No doubt some of them hoped that state landlordism would finally evolve out of the program. Most of what the RA and FSA undertook would have been acceptable to the public if these agencies could have furnished assurance that the farms would return to private ownership in due time. The

inclusion, in some FSA regions, of poll taxes in the farm and home budgets for rehabilitation loans did not improve public relations.

3. The RA and the FSA reached out and undertook a long list of supplemental activities, such as farm debt adjustment, coöperative buying and selling, medical coöperatives, improvement of leasing arrangements, grazing associations, farm labor camps, and the interstate movement of farm workers, nearly all of which were highly desirable in themselves, but each of which aroused opposition from some group.

4. As a result of the foregoing, groups that were opposed to some of the things which the RA and FSA very properly undertook to do were put in a position to attack them effectively. These groups included the landlords, who did not want any outsiders trying to reform their bad leasing systems. They even included some of the state agricultural extension services, which did not like to have a Federal agency working largely independently of them with large numbers of their farm families.

It thus follows that no settlement projects, as such, will be available in which the returning veterans can find a farm and home for themselves. Moreover, it is extremely doubtful if Congress in its present mood will permit the Veterans' Administration to organize veterans' colonies of the sort attempted after the last war. It may not legislate directly against such action, but it will surely look strongly askance at it. There is, however, in the bill now before Congress designed to reorganize the FSA, the Cooley Bill, a provision that farms in settlement projects suitable for Tenant Purchase farms may be so classified and sold as such, to veterans as well as to tenants.

More serious by far than the veterans' deprivation of a chance to share in closer settlement is the circumstance that the most ambitious undertaking of this sort in modern history has come to an end. This means that no one in this country will obtain the benefits of this particular kind of public assistance, until such time as the last experience has been forgotten, or perhaps until a very different group of Congressmen is elected. This need not have been the outcome of this venture. With more effective and more rational leadership and direction, much of the program would still be in operation.

OTHER FSA OPPORTUNITIES

Thus far, there is nothing to prevent a veteran from receiving help in reëstablishing himself on the land from the FSA's other two programs. The attacks on the rehabilitation loan program have until now largely failed. They have reduced appropriations, but probably little more than has been warranted. But if the Cooley Bill passes in its present form, the loans will be held down to $3,500, they must be all paid off within five years, or at least, if they are not, no further loans can be obtained till they are. Moreover, no loan will be granted unless the farmer is unable to obtain it at a land bank at six per cent interest. Finally, the Cooley Bill, to use Congressman Cooley's own language in reporting the bill, "provides no basis for the paternalistic supervision and coddling practiced by the Farm Security Administration in the past." Of all these restrictions, the last one is by far the most serious. The FSA has made most of its loans almost from the beginning on the basis of farm and home plans and budgets of expected receipts and expenditures, and then has checked each year's performance against these plans, and in many cases kept a joint checking account with the borrower until he could be trusted to use his money in accordance with the plans. Without this servicing, half the reason for rehabilitation loans disappears. Provision for close collaboration with county extension staffs in such servicing would be highly desirable, but not its elimination.

The magnitude of the FSA loan programs is not usually appreciated. One farmer in every six now has, or has had, such a loan at some time since 1936. About a third of them, mainly the earlier ones, have not been serviced. Of the "standard" loans, that is, those made on the basis of plans and servicing, only one in six had been terminated a year ago because repayments were not satisfactory. The delinquencies are largely grouped in a block of Southern States where large numbers of loans were made to one-mule croppers at the very start of the program. Over a third of the nonstandard loans were not being repaid. On all FSA loans combined, collections have exceeded loans since 1941.

The third major part of the FSA program is that authorized under the Bankhead-Jones Farm Tenant Act of July, 1937, under which, by June, 1944, approximately 37,000 tenant farm families had already become owners of farms under forty-year amortization mortgages. A year ago the tenant purchasers had met their

annual payments and a half more, and only a few hundred were not up to schedule in their payments. These farms are planned and budgeted at the start even more carefully than those receiving standard loans, but it is expected that very little servicing will be needed after the first few years. This program has been outstandingly successful, but its budget has been restricted. This was desirable at the start, and again is with land prices at their present levels. When the land market becomes stable again, it should be expanded considerably.

The rehabilitation loans are of course available to veterans who otherwise qualify, and the Cooley Bill makes tenant purchase loans available to them, whether or not they are tenants or farm laborers, and also gives them preference over non-veterans in order of selection. This last is highly important, unless the appropriation for such loans is greatly increased when the war ends. The Cooley Bill contains a new feature which may help in this respect, namely, the insurance of mortgages on farms that meet the requirements of tenant purchase loans. Under this plan the government would collect the interest and pay three per cent to the mortgagee, ordinarily expected to be a local bank, and take over the loan if the mortgagor defaulted longer than a year. Veterans would also have the first call on all insured mortgages. Under the Cooley Bill, a total of $150,000,000 per year would be available to veterans or others to purchase farms under the two arrangements.

The New Legislation

Let us under this head analyze briefly the special legislation recently enacted for helping veterans obtain farms — the Canadian legislation first. Under the Veterans' Land Act of 1942, as amended in October, 1943, the Director buys a complete farm business, or the makings of one — that is, land, buildings, livestock and farm equipment — and sells it to the veteran under a contract at *twothirds of the cost* of the *land and buildings only,* plus 10 per cent of the cost of the land and buildings. The veteran must pay this 10 per cent in cash when the contract is written. The two-thirds is payable over 25 years, with interest at $3\frac{1}{2}$ per cent. Interest only may be required for the first five years. The Director holds title to the property till the debt is all paid. The maximum loan is $6,000, of which not more than $4,800 may be for real estate, and not more

than $1,200 for livestock and equipment.[7] The cost of these may be more, but the veteran must pay the excess in cash. If the veteran already owns a farm, he may obtain a loan for improvements up to 60 per cent of the value of the land, or for livestock and equipment up to 50 per cent of the value of the land, or for both purposes up to 60 per cent, by giving a first mortgage on his land, this also running for 25 years. The Act covers part-time as well as full-time farming, and also commercial fishing. Liberal provision is made for giving the veterans "practical instruction in farming" in the agricultural colleges or through extension services.

The first comment to be made on this program is that it puts the government in a position to exercise close control over the programs, especially at the start. In this country Congress refused to let the administrators buy and resell land in setting up the Tenant Purchase program. It was not going to have the government "getting into the real estate business." Next, one should note particularly the outright gift to the veterans of nearly a fourth of the cost of the real estate and improvements, plus up to $1,200 in livestock and equipment. On a maximum purchase of $4,800 for land and buildings, plus $1,200 for livestock and equipment, the veteran would pay $3,200 plus $480, and the government would contribute $2,320. Thus the veteran's debt burden is kept down to around two-thirds of his investment, which is about in keeping with the recoveries on the advances to veterans on farms after the last war.

One may still question, however, whether the maximum loan on real estate, after being raised from $3,600 to $4,800 in the 1943 amendment, is high enough to enable a veteran to set up an economical unit in some of the provinces. The limit under the 1919 Settlement Act was $7,500 for real estate and equipment combined, and the average loan was $4,270. Moreover, the experience of the Federal Land Banks in the United States is that a loan on a $10,000 farm is much safer in most areas than one on a $4,000 farm. The Tenant Purchase loans have averaged $5,600, and many of the operators have had rehabilitation loans in addition. Outside of the South, the Tenant Purchase loans average more than $8,000. The records show that, for the United States as a whole in 1941, the Tenant Purchase farmers with loans of less than $4,000 paid back $135, or 98 per cent of the scheduled payments, while those

7. The maximum was $4,800 before the 1943 amendment.

with loans of $8,000 or more paid back $499, or 125 per cent of their scheduled payments.

The reasons why the limit was lowered to $4,800 in the new Canadian legislation seem to have been mainly that only a small percentage of the actual farms of Canada are worth more than $4,800, and it was thought that the veterans wanting to buy more expensive farms would in most cases either have savings of their own or would be able to obtain help from their parents. It was also felt that the great mass of Canadian farmers living on farms worth less than $4,800 would look askance at the program if it financed purchases of expensive farms. The more costly the farm, of course, the larger the gift of one-third of its purchase price.

The setting of a fixed limit on the amount of the loan does, of course, discriminate somewhat between different parts of Canada. Farms are relatively low-priced in largely agricultural Quebec and the maritime provinces. Here the farms are relatively small and the population presses on the land resources, as in much of the southern territory of the United States. Veterans will have no difficulty in finding better than average farms for $4,800 in these provinces, and no doubt it will be in these provinces that most of the loans are made, unless the Act is administered with unusual discretion. But should veterans be encouraged to undertake farming in areas already overcrowded? With the use of more power and machinery on family-sized farms a likely prospect even in these provinces, should not the veterans be discouraged from contracting to pay for small cheap farms?

The Tenant Purchase program in the United States operates under a flexible limit, provided in the Tarver Amendment. The maximum purchase is the average value of farms in the county of more than 30 acres, not including building and other improvements that may be added after purchase. Application of the Tarver Amendment rule in Canada would probably mean, at 1939 farm real estate prices, farms with a value of $4,200 in Nova Scotia, $5,500 in Quebec, $6,300 in Ontario, $5,000 in Manitoba, and $6,500 in Alberta. The Tarver Amendment rule is far from satisfactory in its application to many local situations, but certainly it is far better than setting a flat maximum for all provinces of $4,800 for land, buildings and all improvements combined. If a limit needed to be set on the amount of the debt forgiven, this could have been

made an absolute figure of $1,600 (one-third of $4,800), like the absolute limit of $1,200 on livestock and equipment.

Although the Canadian Act says nothing about settling the veterans in colonies, it can work out that way in part, if the Director finds it advantageous to buy large farms and break them up, or to develop some blocks of land still within the public domain. He is now buying land with this purpose in mind, planning to clear it with modern machinery, get it ready for cultivation, and erect the needed farm buildings. All of the provinces have uncleared land, and British Columbia and Ontario have already passed legislation making such lands available and making special concessions to veterans. Other provinces are working on similar plans.

The manufacture of farms out of the wilderness with bulldozers and other modern equipment, and then colonizing them, will be an undertaking of great interest. Until now, most ventures of this sort have involved too heavy costs and also have fared badly in the settlement stage. Even the reclamation projects that have succeeded best in the past are mostly those in which the investment in advance of settlement was small.

The part-time farming feature of the Canadian program is also of great interest. Dr. Robert England writes that the servicemen are evincing great interest in this. What the Director has in mind really is suburban homes with five or ten acres of land. The applicant must have a good job, in order to qualify, or a pension, or a satisfactory combination of the two.

The New Zealand veterans' program is apparently largely based on the subdivision of estates. The "productive value" of the land is to be based on the average value of farm products in the last ten years. The New Zealand program proposes to train its veterans for agriculture, in part by having them work as apprentices for a period before selecting their farms.

The essential features of the Servicemen's Readjustment Act of 1944, in so far as it pertains to veterans and farming, are the guarantee by the Administrator of Veterans' Affairs of loans up to half the value of land, buildings, repairs and improvements, livestock and equipment. The aggregate amount guaranteed, however, must not exceed $2,000. The loans may be of any amount, but the guarantee is limited to $2,000. They carry four per cent interest, and must be repaid within twenty years. The government pays the first year's interest on the guaranteed amount. This same

guarantee, under identical conditions, is available to veterans wishing to buy a home, or to purchase a business or business property. Agricultural training for veterans is supported the same as other training — for a year at $50 a month ($75 for married men) plus tuition, books and incidental fees, and for additional time if the veteran makes passing grades in his courses. The purchase price of all property of all three types must not exceed "the reasonable normal value thereof as determined by proper appraisal." To obtain a loan for either agricultural or business purposes, the veterans must have the necessary "ability and experience," and the proposed venture must offer "reasonable likelihood" of success.

The benefits to veterans afforded in the Act are limited to the following:

1. A very liberal training period.

2. A chance for some of them to obtain a loan that they could not otherwise get from a bank or other local sources.

3. The government's sharing of the risk. If the venture fails, the veteran loses part of what he could have earned in the same period, and probably some resources of his own that he put into it; the government loses half of the invested capital, except as it may recover from foreclosure proceedings. The rights of the government are "to be subrogated to the lien rights of the holder of the obligation," that is, come after them.

4. A reduction of one or more per cent in the interest rate on the loan (depending upon the territory).

5. A year's relief from interest payments on the guaranteed amount.

The first of these contributions will be of great value to those who choose their training wisely and take it seriously. For some of the veterans, it will mean largely frittering away a year or more of their young lives. For veterans who really intend to farm, the training will need to be adapted to very practical needs and to the educational limitations of many of the applicants. Apprenticeships would be better than formal schooling for many of them.

The conclusion of the writers, after considerable study, is that the value of Numbers 2, 3 and 4 in the above list to agriculturally disposed veterans is highly limited. The bases for this conclusion appear in the examination of the use of the guarantee in the following situations:

A. First, take the case of the veteran who already owns a farm, or part of one, obtained by inheritance or help from his parents, who needs additional capital for any of the following purposes: (1) To buy more land — a very important purpose, since a large majority of the family farms in this country are now too small for effective use of the power and machines that will be used increasingly on them. (2) For additions to, or repairs and improvements of, farm buildings; or for land improvements, like drainage and woodland development. A majority of the farms of this country need capital for such purposes, partly because the prolonged agricultural depression of the inter-war years delayed such repairs and improvement, and partly because new developments in agriculture in many cases call for additions and changes. (3) For power and machinery equipment. Indications are that all sizes of farms, and especially those commonly designated as family or family-size farms,[8] will increase their use of power and machinery rapidly in the next decade or two. Farms which fail to do this could be greatly handicapped in competition with the others. (4) For additional or improved livestock. The most promising escape from the "surplus" situation which is likely to confront our agriculture within a year or two after the war is to shift more of our production into livestock and livestock products, which require much more land per unit of human food. For example, the average acre of wheat in the United States provides nearly four times as many calories as the average acre of land used to grow forage and grain for dairy cattle; the average acre of corn eight times as many calories when used as human food as when fed to dairy cows, four times as many as when fed to hogs, and twenty times as many as when fed to beef cattle. Livestock loans will facilitate these shifts and buy the improved breeding stock needed to raise the productivity level of present herds. New methods of breeding, used along with artificial insemination and herd improvement associations, afford new opportunities in this line which an ex-serviceman cannot afford to forego. (5) For annual working capital — especially important in crop-specialty and animal-specialty areas.

For any of these purposes, a loan ranging up to $4,000 or more, at four per cent interest, to run twenty years, with no interest the first year, should be highly attractive from the veteran's standpoint.

8. The second is the more precise term — it connotes the size of enterprise which an average-size farm family can handle with little or no hired labor.

But how will the lender react to it? In return for the government's guarantee of one-half the principal, and subrogating its lien rights to his, he is expected to take a cut in the interest rate of anywhere from one to six per cent (depending upon the region), and to accept repayments over a period of twenty years, if need be, in place of the usual five years on a real estate mortgage, and less on a chattel mortgage. It is difficult to believe that willing lenders will be easily available under these terms. Local banks, in particular, do not like to freeze their funds in such long-term loans.

The veteran, in turn, has several alternatives. For the first purpose, a real estate mortgage from the Farm Credit Administration, usually running for around thirty years, and carrying four per cent, plus a little extra for fees, is available. For the second purpose, the FCA has production credit loans, which cost an average of 5.24 per cent. These normally run for one year or less, but are regularly renewed, if used to purchase livestock or equipments. Still more important, the FSA, in so far as its funds will permit, can make loans to veterans for the third and fourth of these purposes at three per cent, to run for five years, and ex-

CAPITAL INVESTMENT NEEDED FOR EQUIPMENT AND FOR STOCKING
AND OPERATING A FARM

Kind of Farming	Investment in Work Stock, Tools, and Equipment	Investment in Chickens, Cows, Hogs, Sheep, etc.	Money Required Each Year for Feed, Seed, Fertilizer, Labor, etc.
Poultry farming (2,000 hens)	$1,000–$1,500	$2,500–$3,000	$1,000–$1,500
Dairy farming (15 cows):			
Northeastern and Lake			
States...............	1,500– 2,000	1,800– 2,500	500– 1,000
Southern States..........	800– 1,200	1,500– 2,000	400– 600
Corn-hog-beef farm........	2,500– 3,000	2,000– 2,500	1,000– 1,200
Cotton..................	600– 800	200– 250	400– 500
Wheat..................	2,000– 3,000	1,000– 2,000	800– 1,200
Diversified farming:			
Northwest and Midwest...	2,500– 3,000	2,000– 2,500	1,000– 1,200
South.................	800– 1,000	700– 1,000	400– 600
Rocky Mountain States...	1,000– 1,500	2,000– 3,000	1,000– 1,500
Cattle ranching (75–100 cows)	1,000– 1,500	5,000– 6,500	1,000– 1,500
Sheep ranching (800–1,000			
ewes)...............	1,500– 2,000	6,000– 9,000	1,500– 2,000

tensible beyond that period at present. It can also make annual loans for the fifth purpose at the same rate. The FSA, however, is supposed to make loans only when other agencies will not do so on reasonable terms.

As to the size of loan required for the last three purposes, the United States Department of Agriculture has recently published the following estimates in a booklet entitled "Shall I Become a Farmer?" intended especially for the guidance of ex-servicemen. The estimates are for a family-sized farm, and do not allow adequately, in the writers' judgment, for the modernizations in equipment and livestock described above.

B. The case of the veteran desiring to become a tenant farmer, who needs capital to buy livestock and equipment, and perhaps some annual working capital. In this case, also, the guaranteed four per cent loan is attractive to the borrowers, but not to the lender. Tenants do not ordinarily remain in one place twenty years, and bankers prefer to loan to owner-operators rather than to tenant-operators. The FCA and FSA loans are also good alternative sources for such loans, especially the FSA.

C. Veterans desiring to buy a farm. Take first the veterans with no resources, except a few hundred dollars of savings sufficient to carry them through until the first crop is sold. The first point to make is that, although the guaranteed loan to a veteran for such a purpose can be for any amount, only $2,000 of it is guaranteed. The reduction in interest rate to four per cent, however, applies to all of it. Although the veteran may appear to gain from this, one can scarcely expect the lender to want to go above the $4,000 limit. Such loans will therefore mostly run under, rather than over, $4,000. The amount of capital required for the real estate part of the family-size farm listed in the table above has been estimated state-by-state in the same booklet. Following are the estimates for a few states chosen as examples. To these estimates must be added those for livestock and equipment in the first table.

Alabama	$3,500–$4,500	Wisconsin	$6,000–$10,000
North Carolina	4,000– 6,000	Iowa	7,500– 12,000
Texas	4,000–10,000	Kansas	8,000– 10,000
Missouri	4,500– 7,500	Montana	8,000– 12,000
Vermont	5,000– 7,500	Washington	8,000– 10,000
Pennsylvania	5,000– 8,000	California	9,000– 12,000

The guaranteed loans will thus help finance the purchase of very few family-size farms by veterans with small savings. If they make use of the loans at all, it will be to purchase small cheap farms, mostly in the South, and in the poorer sections of other states. They will have poor incomes — certainly ones that will not justify the government's spending much on their training. They will usually be able to pay off their mortgages very slowly; and only if they are very prudent and thrifty, will they own their farms at the end of twenty years. It is to be doubted if any program for agriculture in this country should be publicly supported which does not promise a net cash income for an able-bodied farmer in the prime of his life of at least $60 a month (in addition to the use of the farm dwelling and food and fuel obtained from the farm); and a reasonable goal for public programs for veterans is twice that amount. A net cash income of $60 a month requires an investment of at least $7,000 on the average; an income of $120 a month, an investment of at least $10,000. These are average for the whole country and the inter-war years. The family-size farms listed above will provide incomes somewhere between $60 and $120 per month. If they are dairy farms, they need from 12 to 15 cows, producing 300 pounds of butterfat a year, plus young stock for replacements, and the necessary pasture and roughage. If they are upland cotton farms, they need from 80 to 120 acres of land, with 15 to 20 acres of it in cotton, and 30 to 50 acres in other crops. A family-size wheat farm will require at least 640 acres; a family-size cattle ranch, from 75 to 100 breeding cows.

Let us now consider the veterans with resources of their own, so that they can furnish all their own livestock, equipment and working capital, and can set up a $5,500–$6,000 enterprise with a $4,000 loan. This will ordinarily earn something like $45 a month in cash income. Additional resources may also be needed for building repairs and improvements. After two decades of agricultural depression, the farm buildings of this country are in poor condition.

To take advantage of the guarantee, a veteran who wishes to be an owner-operator ought to have enough resources of his own, as an average for the United States, to raise the $4,000 to at least the average amount invested in Tenant Purchase farms, which is around $7,400 (the loans have averaged $5,600, and the purchasers have had about $1,800 of working capital). Besides, the "normal

value" of farms is likely to average higher after the war than in 1937–42. But veterans with $3,000 of their own may in many cases be able to finance themselves better elsewhere, if they keep from getting mixed up with a $2,000 government guarantee with priority and subrogation rights.

If the veterans do not have $3,000–$4,000 of capital of their own to add to the $4,000 — and a majority of them will not — they had better not try to own farms at this time. The wiser plan will be to use their guaranteed loan privileges to acquire the working capital needed to start in as cash or even share tenants on good farms where they can make a reasonable income, and to wait to buy their farms until they have enough capital for adequate ones.

If the veterans are to be encouraged to start as tenants, they need to be given good leases, and not many such leases are now in use in the United States. Such a lease will assure the tenant of a long enough tenure on his farm to make it worth his while to maintain the buildings and land in good condition, and even improve them; and it will compensate the tenant when he leaves for any unexhausted values in improvements he has made. The Veterans' Administration could advisedly give some attention to developing a suitable lease for veterans, and to encouraging the veterans to lease rather than to buy.

The foregoing is wisdom, but it is not likely to be accepted. Instead, the mistake of the last postwar period of putting veterans on very small or poor farms, and also the similar mistake of Subsistence Homesteads and RA, is likely to be repeated. If many agricultural real estate loans are guaranteed, a large fraction of them will be in the eleven southern states, where the average value of owner-operated farms in 1940 ranged mostly from $2,500 to $4,500, and in the poorer sections of other states. The local bankers will try to protect themselves by mortgages covering the whole property. The collections will be poor, and a large percentage of the veterans will quit making payments as soon as they can find a regular job somewhere. The veterans will in the meantime have lived, in a fashion, off the government's bounty, and maybe a little off the local bankers, if they do not watch out. As a stage in the readjustment of the veterans, such use of the public funds may be warranted, as is maintained by Mr. Murchison in the case of the Canadian veterans after the last war; but to lay out a program that contemplates such an outcome in advance is dubious strategy.

If many under-size veteran farms are set up in the South, there will be the further complication that cotton production is faced by drastic readjustments in the next decade or two, because of the mechanization in prospect. Except in the delta and similar areas, farming is likely to become considerably more extensive and diversified than it is now, and larger farms will therefore be needed.

LEGISLATIVE BACKGROUND

A few words about the origin of this legislation may help us to understand it. A wide variety of approaches to the problem have been presented to Congress. Most of the bills are earlier versions of the bill finally passed. These include a whole batch of bills introduced in January, 1944, that resemble the final bill in many respects, but differ drastically in the extent of the aid. The upper limit in these was ninety-five per cent of the value of the farm up to $12,500, at five per cent interest for forty years, in the form of a direct loan by a state agency set up under the Veterans' Administration. Two later versions introduced in the spring went to the other extreme of a $1,000 limit at three per cent, in the form of direct loans from the Veterans' Administration, and included business loans. Apparently the $2,000 limit finally reached as a general provision was a compromise between what was deemed proper for a business loan and proper for an agricultural loan.

Bills representing other approaches to the problem are those of Congressman Patman and Senator Bankhead, introduced in the fall of 1943, which would amend the Bankhead-Jones Farm Tenant Act to include veterans, and appropriate the necessary additional funds. The Bankhead Bill also provides for proper distribution between the states, and includes the plan for insuring farm mortgages now in the Cooley Bill. This scheme, borrowed from Federal experience with the insurance of mortgages on homes, had been introduced by Congressman Wickersham in June, 1943, as the sole device for helping veterans to buy farms. It was to be administered in the Department of Agriculture. The Lemke Bill would insure each veteran according to the length of his service, up to a maximum of $10,000, and use his insurance policy as a basis for farm loans. One of the simplest and most direct of all the proposals was that of Congressman Reid Murray of Wisconsin, to have the FCA

make forty-year loans at three per cent, with appraisal on the usual FCA "normal value" basis, with no limit to size of loan, and with a $1,000 bonus thrown in. The latest bill (at time of writing) is that of Hatch and White of California, which gives veterans preference in buying farms in the big Central Valley project, and outlines a detailed plan of administration by the Veterans' Administration and the Department of Agriculture. The Murdock Bill makes general provision for the entrance of veterans on public lands in reclamation projects of the Department of Interior.

Most of the discussion as this article was being written centered around the method of disposal of the lands taken over for military use during the war. This included around three and one-half million acres of farming land, about a third arable. In the recent surplus property law, the veterans are given priority of purchase, after the former owners and tenants. This will not help the veterans much.

Most of the Congressmen who voted for the G. I. Bill were apparently not thinking very hard about the problem of helping ex-servicemen to become farmers. By that time, they had got to thinking of the ten million male veterans — nearly a third of the male working population of the nation — who would need to be readjusted to their former lives, and of the immense outlays involved in this, if actual advances were made. The idea of guaranteeing loans, instead of making them, suggested perhaps by the Bankhead and Wickersham Bills, seemed a happy solution. In so far as they thought of servicemen on farms, they could not have been thinking of an honest-to-goodness family farm where the family can live the kind of a life that the family of a union laborer lives in the city. Instead, they must have had in mind a small-holding and subsistence on the land. Providing this as an alternative to the unemployment of veterans, which most Congressmen fear within two or three years after the war, must have been a large factor in the support for the measure.

The Canadians, on the other hand, have made additional provision for veterans wishing farms. What they have provided for such veterans is so much more liberal, and so much better conceived, than our provisions, as to put this country very much to shame. Perhaps the explanation for this is that many of our farm leaders are not much interested in helping young men with very limited resources to become farm owners. And the farm groups

that would normally be concerned over this were thinking in terms of smallholdings. A surprising number of the leaders in these groups conceive of a family farm and a smallholding as one and the same. They sometimes talk in their meetings of breaking up 160-acre Iowa farms into 80's and 40's, so as to make room for more farm families. This point of view has been most strongly expressed of late by Elmer T. Peterson[9] in his dictum that "There just isn't enough wealth-producing work in town to keep eighty-five per cent of our manpower employed. Some will have to get on the soil and produce their own food, or they won't eat." He concludes that at least one-fourth of the nation's population must obtain its living from the land. O. E. Baker, Ralph Borsodi and M. L. Wilson wrote in similar vein in Agriculture in Modern Life.[1] President Roosevelt must have had similar thoughts when he spoke of back-to-the-land for veterans in Alaska upon his recent return from that region; so must Governor Saltonstall some months earlier, when he urged return to the land as a remedy for postwar unemployment in a talk at Burlington, Vermont.

NEED FOR SOLDIER SETTLEMENT

Nowhere thus far in the discussion has the question been raised whether ex-servicemen should be encouraged to become farmers. The case for it can be stated in the following terms:

First, around 1,300,000 men have entered the services from the rural areas. At the same time, around four million have gone into industrial and other non-farm work. The number of skilled farm workers has been reduced very greatly in consequence. Mechanization of agriculture can be expected to proceed rapidly for a while after the war, but there will still be need and opportunity for a good many servicemen in farming.

Second, the farm operators of this country have been getting old rapidly in recent years, and younger men are going to be needed in large numbers, if the quality of our agriculture is not going to decline.[2] This was coming about before the war, because, at one end, the older farmers were not retiring at their former rate —

9. Forward to the Land, University of Oklahoma Press, 1942.
1. New York, 1939.
2. The statistics on the aging of farm operators are conclusive. There were nearly a half more rural-farm males over 65 years of age in 1940 than in 1920, and over a fourth more over 55 years of age. The percentage of farm operators over 65 years of age increased 30 per cent from 1920 to 1940.

mainly because they could not afford to — and at the other end, young men had been dropping off the agricultural ladder in unusually large numbers. Both of these were results of the prolonged inter-war agricultural depression. Included in the present group of farm operators are perhaps 200,000 who would have retired, if the war had not come. But this is only a small fraction of those who need to be replaced by younger men.

Third, agriculture needs to make some contribution to the postwar full employment and full production now being planned. A full-production economy also means a larger national agricultural output, and possibly more employment in spite of mechanization.

Fourth, included among the veterans will be a fraction for whom farming will be the preferred occupation. The nation's obligation to them can be fulfilled only by helping them to become farmers. If an industrial worker has an assured job, he is adequately provided for. A farmer needs a farm, however, and this takes money, which many do not have.

Among this number will be some who are partly disabled and for whom a farm life is clearly their best outlook. These especially need public aid. The part-time feature of the Canadian program could be adopted for this purpose.

These arguments, however, could very easily be overweighted. One gets the impression from the United States Department of Agriculture's booklet, "Shall I Become a Farmer?", that the answer hoped for will be "no" more often than "yes." Secretary Wickard stresses in his introduction the importance of "an adequate farm and sufficient equipment and capital." The text stresses the long hours, the hazards of weather, the low cash returns. "Farming, in fact, is a hard way of making a living."

Back of these statements, no doubt, lies the fear of impending surpluses after the war, and the cold fact that our farms have produced in 1942–44 a fourth more farm products than in 1935–39, after losing five millions of their best workers. It is industry and trade that mainly must expand, if the nation is to have full employment. Already this nation has too many farms and farmers; and so have many other nations.

Soldier settlement must not serve to increase the number of families on farms. Instead, it needs to take the form of selective replacement of relatively unproductive farms and farmers by a smaller number of better ones. Accompanying this selection

needs to go the kind of agricultural training that modern farming demands.

In this connection, a recent statement by Director Murchison of the Canadian Veteran's Land Act deserves high commendation:[3]

> The greatest danger to the success of postwar land settlement enterprises is haste in getting the job done too quickly. Pressure from the veterans and certain sections of the public is understandable, but inevitably it leads to poor selection of veterans and properties on which they are established, not to mention the highly inflationary effects of acquiring vast amounts of property and chattels over a brief period of time. My own view is that the maximum point of operations under The Veterans' Land Act should not be reached until approximately ten years following the expiration of hostilities.[4] It will probably be hard to convince many veterans and others that this period of time should elapse, but we must recognize that there will be tens of thousands of our veterans who prior to enlistment were attending school or had not reached an age where they had ever had the responsibility of maintaining a farm or any other kind of home. Many thousands of them will still be single men when they come out of the forces and for a considerable period thereafter. So long as they know that the provisions of this Act will be available for many years to come, there is a good argument as to why they should go slowly in deciding precisely where and how they intend to make a permanent livelihood.

LOAN VALUES

The time when the loan is made is closely involved in the problem of price levels and farm real estate values. The G. I. Bill and the Canadian Act both attempt to require appraisal on the basis of the normal earning power of the farms. This "normal value" provision will tend to work out in either of two ways: the normals will be lifted by raising the level of farm prices on which they are based — raising it more nearly to "parity"—or relatively few guaranteed loans will be made. The Farm Credit Administration is still supposedly appraising cotton land on the basis of normal yields at ten cents per pound. The parity price of cotton is more than twice this, and Congress last June required the government to raise cotton prices all the way to parity. Farm real estate values have already risen 42 per cent in the United States during the war, but they are still slightly below 1929 values, and 1929 values were 32 per cent below 1920 values. "Normal" in terms of 1939 conceptions of prices of farm products is going to look very low after the war. The Canadian average farm real estate price has risen

3. From a letter of August 30, 1944.

4. The G. I. Bill requires applications for loan guarantees to be made within five years.

only 13 per cent during the war; but in Quebec the rise has been 32 per cent and in Ontario, 22 per cent. Relations to 1929 and 1920 prices are about the same as in the United States, except that the 1920 prices were not so high.

Another aspect of the land value problem should not be overlooked, namely, that a strong demand by servicemen for farms will surely induce an inflation of these values. The real land boom of the last war period did not come until after the men had come home. Detailed studies of it in Iowa and Kentucky, however, show that the basis for it was purchasing power in the hands of farmers' sons and tenants derived from the good farm incomes of 1917–19. Some of this purchasing power went to help veterans obtain farms, but not a major fraction of it, as assumed by many. The situation will be different this time, because larger numbers are involved. The buying of Tenant Purchase farms has not thus far been enough of a factor in most localities to strengthen the land market. It would be, if the rate of buying were trebled. The Tarver Amendment was passed because some Congressmen believed that the Tenant Purchase administration was paying too much for its farms. It has to some extent had the effect intended.

But even the Farm Tenant Act is incompetent to deal with the problem raised by rising land values in wartime. On the one hand, the servicemen should not be loaded down with debts incurred at high land-value levels. On the other hand, few farms will be for sale at old "normals." That the Tenant Purchase program has been able to make loans at all in the last two years has been mainly because of farms released in resettlement projects. Several alternatives are available:

1. Give the veteran an option to buy in five to ten years at an appraisal value then to be determined, and let him farm under a lease in the meantime. This would require the government's holding title to the farm in the meantime. The government would lose if land values declined, but it is better to have the government hold the bag than to make the veterans do it. This plan would also have the advantage of giving the veteran a chance to see if he really wanted to farm, and if he liked the particular farm.

2. Make an outright sale to the veteran, but provide for rewriting the amount of the mortgage at a specified time after the war, in case farm real estate values decline (not otherwise), using a national or regional index of farm real estate values as a basis.

This might also mean the government's taking some losses from decline in land values.

In its present mood, Congress will be more likely to accept the second of these plans. Either of them is entirely feasible.

TENANT PURCHASE AS AN ALTERNATIVE

The Servicemen's Act also specifies that veterans are eligible for Tenant Purchase loans. The Bankhead-Jones Farm Tenant Act, however, requires these loans to be distributed according to farm population and number of tenants in a state. Many counties have quotas of only two or three a year. Even stepping up the appropriation to $150,000,000 a year, as provided in effect in the Cooley Bill, would not begin to suffice for the veterans' needs in many sections of the country. If this Act were amended so as to take care of all the veterans wishing farms of their own, the following advantages would be afforded over those in the Servicemen's Act:

1. The loans would be large enough for real family farms.

2. The size of the loan would be adjusted to the type of farming in the area.

3. The interest rate would be three per cent.

4. The repayment schedule would be flexible according to the income of each year.

5. The loans would be very effectively serviced.

6. The program would attain a reasonable measure of success with small losses. The fact of the matter is that we now know in this country how to do a job of resettling farm families. The Tenant Purchase administration has demonstrated how to do it, at a cost to the government well under what the Canadians have agreed to undertake by throwing in $1,200 of equipment and livestock and one-third the cost of the land and buildings. The Tenant Purchase borrowers are mortgaging their farms for the full cost of the land and buildings, and still paying out. The help given at the start in planning the farm business and putting the farm in productive condition, plus selecting family-size farms rather than smallholdings, are the main reasons for this success.

A clause in the Servicemen's Act authorizes the Veterans' Administration to use existing agencies. It can therefore make use of the Tenant Purchase agency in carrying out its program. But the program is such that not even this agency can make it

serve the veterans' needs. The guaranteed loan provisions are too inadequate and too full of dangers. The Tenant Purchase program, moreover, needs to be kept clearly distinguished from the veterans' land program as this program is conducted under the Act as now written.

If one purpose of the guaranteed loan scheme wr to give local banks a chance to carry the loans, that purpose is easily attained through the mortgage insurance provision of the Cooley Bill. If Congress were to do nothing else than to pass this provision of the Cooley Bill, and increase the $100,000,000 to $500,000,000, it would do much more to help veterans obtain farms than the whole Servicemen's Act will accomplish.

Concluding Statements

As the situation now rests, servicemen seeking farms on which to support their families in large part from the proceeds of farming, and not having enough resources of their own to buy one with credit facilities already available, will do well not to use the guaranteed loans in the G. I. Bill. Instead, they should ask f · Tenant Purchase loan, and if not enough of these are availaι , demand that Congress vote additional Tenant Purchase funds. If they already have a farm free of mortgage, and want to borrow to make improvements or buy livestock or equipment, the G. I. Bill twenty-year guarantee is a good offer, if a lender can be found. Most young owner-operators, however, have mortgages on their farms and cannot take advantage of this offer. It is to be presumed that the veterans will have access to the facilities of the rehabilitation loan program of the FSA, in case the local bankers are not willing to care for them. But the FSA funds may not be adequate and the Cooley Bill may shorten the period of such loans unduly. The Veterans' Administration can guarantee twenty-year loans for such purposes. It could call upon the FSA to handle this type of loan, also, if Congress would appropriate the necessary funds.` Probably both types of loans are needed.

This article is not concerned with the rest of the Servicemen's Act, but it may be enlightening to remark that guaranteed loans up to $2,000 for veterans going into business are even more tricky than for those going into farming. As is well known, the turnover in retail businesses and small shops is extremely high. Very little capital is required to start most of these. Perhaps the Con-

gressmen were thinking of this when they set the limit at $2,000. There have been indications that many of the men in the services are thinking that they would like a store or shop of their own when they get home. Certainly there has been enough propaganda recently for hat kind of "free enterprise." One does not readily visualize the Veterans' Administration making surveys of sections of cities to see at which locations a new store or shop is likely to succeed. Yet this is what the Act asks them to do. It no doubt will call on the Department of Commerce to help with this task, but this is a new rôle for the Department of Commerce, and one has no right to expect this agency to be equal to this difficult assignment at the start.

On the one hand, the desire of Congress to do as well by the city boys as by the farm boys in the service may have prompted it to reach out from farms for veterans — a long-established tradition — to homes for factory workers, stores for white collar workers, and shops for mechanics. On the other hand, making a program to fit ε ᐟᐟthem at once may have resulted in one that does not fit any oᵢ .iem.

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WAR AND INFLATION IN SPAIN, 1780-1800

I

During the last quarter of the eighteenth century, wars or
revolutions drove one country after another into paper-money
inflation. Under the impact of torrential issues, weak governments,
and doubtful military prospects, Continental currency and the
assignats lost practically all their value and gave way to bimetallic
standards. With invasion by French legions momentarily expected,
the Bank of England suspended specie payments in 1797; and,
although depreciation was never disastrous, resumption was not
feasible until six years after Waterloo. In 1775 Count Campo-
manes, one of the ablest economists and greatest ministers in
Spanish history, listed as a great national asset the freedom from
paper-money inflation that other European countries had suffered.[1]
Only five years later war with England forced Spain to issue and
overissue paper currency. The paper rose to par less than three
years after the conclusion of peace and maintained its position for
a decade, but successive conflicts with France and England induced
serious inflation. Appeals to patriotism, intervention in the bullion
market, strict prohibition, and a host of fiscal measures failed to
prevent severe depreciation. The cost of living rose, wages lagged,
economic activity faltered, and confidence in the government
waned. Continuing after 1800, monetary disorder paved Napo-
leon's road to Madrid.

An ardent desire to recover Gibraltar, Minorca, and Florida,[2]
to drive English intruders from Honduras and Campeche, and to

1. Apéndice a la Educación Popular (Madrid, 1775), II, xxxvi–xxxvii.
2. All lost to England since the advent of the Bourbon dynasty in 1700.

avenge the humiliating defeat by England in 1762–1763 largely motivated the economic reforms of Charles III (1759–1788) and his enlightened ministers. Although the army, navy, and economy were still unprepared, Spain secretly aided the American colonies with money and munitions from the beginning of their revolt, and decided to strike in June, 1779, when the Revolutionary War was at its height, France was an ally, and other European powers were not likely to intervene. Since the recovery of lost territory was her goal, Spain opened the conflict with strong offensives. She immediately attacked Gibraltar, the British "thorn in her feet"; launched drives to regain Honduras, Florida, and Campeche; and joined France in dispatching a second Invincible Armada, bearing an army of sixty thousand men, to destroy the British fleet and overrun the country. For several years before the outbreak of war the budget had been unbalanced by a wide margin; and in spite of the evident popularity of the conflict, Charles was unwilling to raise taxes because of the effect upon morale.[3]   .

II

Although the costly initial campaigns seriously embarrassed the royal treasury, the safe arrival of specie from the New World in 1779, the liberal use of mercantile credit, and a large loan in Amsterdam tided Spain over the first fifteen months of war. Realizing in the summer of 1780, after protracted secret communications, that England would not surrender Gibraltar or the other lost territory in a negotiated peace, Charles resolved to prosecute the war with increased vigor and eagerly sought the necessary resources. The Five Greater Guilds of Madrid (Cinco Gremios Mayores), which, in the absence of a national bank, were the largest holders of liquid funds and the best source of a short-term advance, agreed to lend the Crown sixty million reals in six monthly installments; but the Guilds could raise only thirty million,[4] and even the full amount

3. Hermann Baumgarten, Geschichte Spaniens (Leipzig, 1865), I, 107ff; Conde de Cabarrus, "Memoria al Rey Nuestro Señor Carlos III," in Cartas sobre los Obstáculos que la Naturaleza, la Opinión y las Leyes Oponen a la Felicidad Pública (Havana, 1814 Ed.), pp. 3, 6–7; Conde de Campomanes, Cartas Político-Económicas, edited by Antonio Rodríguez Villa (Madrid, 1878), pp. 151–152; Modesto Lafuente, Historia de España (Madrid, 1869 Ed.), XX, 417–505; Rafael Altamira, Historia de España (Barcelona, 1906 Ed.), IV, 63–70; Archivo General de la Nación, Mexico — hereafter cited as AGN, Reales Cédulas, Tomo CLXXIX, No. 86, fol. 118.
    4. Conde de Floridablanca, "Memorial Presentado al Rey Carlos III," in Biblioteca de Autores Españoles (Madrid, 1867), LIX, 333–334.

would have been too little. Having defaulted upon the obligations of his predecessors early in his reign, Charles failed to borrow a substantial sum on long term, either at home or abroad. To the rescue came a syndicate of French, Spanish, and Dutch financiers, headed in Spain by François Cabarrus, the French-born projector who later founded the Bank of Spain, and directed in Paris by Jacques Necker, the Genevan Finance Minister under Louis XVI. The Government gladly accepted the syndicate's offer to advance nine million vellon pesos[5] in specie and bills of exchange and to accept in return 9,900,000 pesos[6] in interest-bearing treasury bills endowed with a forced circulation.[7]

The decree of September 20, 1780, authorizing the issue of 9,900,000 pesos of treasury bills — hereafter called *vales*, as in Spanish — carefully prescribed their monetary characteristics. Since these remained virtually unchanged in subsequent issues, a detailed examination is warranted. Drafted by Cabarrus,[8] the decree gave vales every privilege that public opinion would tolerate. They were acceptable for all taxes, dues, contributions, and obligations to the Crown, and legal tender for the payment of promissory notes, bills of exchange, unsecured debts, and "all other contractual obligations whatsoever . . . precisely as if they were effective, usual, and current money." The penalty for refusal to accept vales at face value and accrued interest or for attempting, directly or indirectly, to discredit them was perpetual exile and exclusion from business transactions with Spain from abroad. An important purpose of the paper currency was to maintain domestic trade in the face of wartime curtailment of the imports of American trea-

5. Accounts were kept and business transacted in terms of vellon maravedis, reals of thirty-four maravedis, and pesos of fifteen reals two maravedis. Vellon was fractional money that originally consisted of copper with a low silver content; but after 1600 most of it, and after 1700 all of it, was coined of pure copper. During the seventeenth century when vellon was overissued and largely drove gold and silver out of circulation, it became the money of account. After 1680 its depreciation was stabilized over long periods, and gold and silver came back into circulation; but vellon retained its place as the accounting unit.

6. The syndicate was granted a permit to export the commission of 900,000 pesos without paying the usual fees (Archivo General de Simancas — hereafter cited as AS, Secretaría de Hacienda, Leg. 359).

7. Library of Congress, Uncatalogued Reales Cédulas, No. 8; J. F. Bourgoing, Tableau de l'Espagne Moderne (Paris, 1803 Ed.), II, 34ff; Modesto Lafuente, op. cit., XXI, 86–87; Archivo del Ministerio de Hacienda — hereafter cited as AMH, Negociado 130, Leg. 1, Atado 1.

8. AMH, Negociado 130, Leg. 1, Atado 2.

sure and of heavy exports to finance military and naval operations. To avoid the danger of driving gold and silver out of circulation, vales were issued only in the denomination of 600 pesos and were not legal tender for smaller sums. They might not be used in retail transactions or in the payment of wages, salaries, or pensions by public or private employers without the consent of the payees. But inasmuch as a single vale would have bought 3,069 dozen eggs, 6,678 pounds of mutton, or 6,982 pounds of rice in New Castile, or would have paid the wages of a master mason at Madrid for 502 days or the salary of a canon in the Zamora Cathedral for eighteen months, the high denomination automatically excluded the paper currency from wage payments and retail trade.[9] In fact, the eight-*escudo* gold piece, which was equivalent to only 320 vellon reals — little more than one-thirtieth of a vale — was far too large for these purposes.

To combat counterfeiting, which had plagued Spanish coinage since the days of the conquistadores, the vales had to be presented every year, when the interest fell due, and exchanged for new ones; and they circulated by endorsement. Those bearing blank endorsements or not delivered for renewal within the stipulated period were subject to confiscation;[1] and the holder of a false vale was allowed recourse against only the last signer. To encourage nationwide circulation, army paymasters in the provinces were to accept vales for payment of the annual interest; and all branches and agencies of the treasury were instructed to receive them at par, including accrued interest.[2]

9. Archivo Histórico Nacional, Madrid — hereafter cited as AHN, Sala de Alcaldes de Casa y Corte, Lib. 1368e, fols. 386–390; Gazeta de Madrid, 1 de Julio, 1785, p. 415; Joseph Alonso Ortíz, Ensayo Económico sobre el Sistema de la Moneda-Papel y sobre el Crédito Público (Madrid, 1796), p. 179; Mercurio Histórico y Político, III, Septiembre, 1780, 88–104; Diario de Madrid, 5 de Mayo, 1787, p. 511.

1. No other regulation affecting vales was destined to cause so much difficulty as that of endorsement. The prohibition of blank endorsements was repeatedly confirmed, and officials were exhorted to enforce the statutes; but the preambles to decrees and the descriptions of lost vales in newspaper advertisement · clearly demonstrate that even businessmen did not take the trouble to indicate the names of the payees when they transferred vales (Gazeta de Madrid, 13 de Mayo, 1783, pp. 416–417; 15 de Mayo, 1787, p. 320; 16 de Agosto, 1791, pp. 582–583; 3 de Mayo, 1793, p. 391; 11 de Enero, 1799, pp. 38–39; 15 de Enero, 1799, p. 360; 8 de Marzo, 1799, p. 183; 6 de Agosto, 1799, p. 702).

2. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1368e, fols. 391–395. For the protection of debtors who had their resources tied up in paper

The only safeguards against depreciation were the general credit of the Crown, the acceptability for all public dues, the annual interest of four per cent, the legal-tender status in financial and wholesale transactions, and the promise that one-twentieth of the entire issue would be retired from circulation in each of the next twenty years.[3] No reserve or sinking funds were established; and despite the wishes of Count Floridablanca, the Prime Minister, who earmarked gold imports from Portugal until he was overruled,[4] no provision was made for redemption in specie.

To continue the siege of Gibraltar, which was consuming an enormous quantity of material, and to prepare the expedition that sailed the following summer to recover Minorca, Charles accepted the offer of a syndicate to supply five million pesos in gold and silver in return for 5,300,100 pesos of vales and a license to export the commission without paying the usual fees. A decree of March 20, 1781, provided for the issue on April 1. Reduction of the denomination to 300 pesos was the only alteration of the monetary qualities,[5] but this was still too high for retail trade or wage payments.

To meet the urgent needs of war[6] without imposing additional taxes, pledging future revenues, or defaulting on the salaries of public employees, a decree of June 20, 1782, doubled the quantity of vales outstanding by an issue of 14,799,900 pesos. A syndicate of Madrid businessmen had offered to advance five million pesos in sixty-day or shorter bills of exchange on Cádiz, Seville, and other domestic money markets in twelve installments and to accept vales with a commission of two per cent, provided the Bank of Spain was established; and Cabarrus had proposed an advance against vales with a very moderate commission, if taxes were raised. Fearing that a tax increase would impede the war effort,

currency, a moratorium was declared on obligations falling due from September 20 to October 15 of each year, while vales were in the process of renewal.

3. AMH, Negociado 130, Leg. 1, Atado 2; AHN, Sala de Alcaldes de Casa y Corte, Lib. 1368e, fol. 387.

4. Conde de Floridablanca, op. cit., LIX, 334–335.

5. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1369e, fols. 342–345; AMH, Negociado 130, Leg. 1, Atado 2; Library of Congress, Uncatalogued Reales Cédulas, No. 23; Gazeta de Madrid, 3 de Abril, 1781, pp. 279–280; 1 de Julio, 1785, pp. 415–416; AS, Secretaría de Hacienda, Leg. 359.

6. Particularly the expenses of equipping some forty thousand soldiers to storm Gibraltar by land and of constructing powerful floating batteries, a secret weapon suggested by a French engineer which was expected to demolish the Rock through bombardment by sea.

Count Floridablanca flatly rejected the proposal of Cabarrus.[7] Providing slow monthly installments and only a third of what was required, the offer of the Madrid syndicate proved equally unacceptable. Furthermore, by this time financiers and merchants had become familiar enough with vales for the Crown to dispense with an intermediary in putting them into circulation; and the Bank of Spain, chartered on June 2, 1782, was expected to mobilize domestic resources and make foreign remittances for the royal treasury on very favorable terms. Hence the vales were not delivered to financiers who had advanced specie or bills of exchange negotiable abroad, but were paid out by the treasury to meet public expenses, and the Government saved a commission.[8] As in previous issues neither a reserve nor a sinking fund was provided; but a committee (junta) of ministers was established to formulate plans for amortization and to stimulate the circulation of vales at par.[9]

III

The high denominations kept vales almost exclusively in the hands of the economically capable, and the penalty for refusal to accept them at par or for "any other action likely to discredit them" was severe. Consequently few traces of early black-market exchanges for specie have survived. This renders it difficult to know how soon or how much the paper currency depreciated. But there is ample evidence that Spanish businessmen — aware of Spain's defaults on her public debt during the past two centuries,

7. AMH, Negociado 130, Leg. 1, Atado 1.

8. As has been indicated, a syndicate had offered to advance five million pesos at two per cent. But whether this or any other private group would have supplied the entire 14,799,900 pesos for a commission of only two per cent is questionable. In fact, it is possible that, with specie imports from the New World shut off and exports of Spanish goods hampered by the British fleet since 1779, private interests would have experienced difficulty in advancing so large a sum in specie or bills of exchange negotiable abroad for any commission, however great. In November, 1782, the Crown tried to secure a million vellon pesos in specie at Cádiz, badly needed for war purposes. The businessmen were able to supply only 4,473,317 reals 22 maravedis — less than a third of the million pesos required; and recognition by the agent who represented the Crown that, through patriotism in the emergency, the businessmen had exchanged specie for vales at less than the current premium suggests that they did not conceal their liquid resources (AS, Secretaría de Hacienda, Leg. 358).

9. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1370e, fols. 479–483; AMH, Negociado 130, Leg. 1, Atado 2; Library of Congress, Uncatalogued Reales Cédulas, No. 25; Gazeta de Madrid, 2 de Julio, 1782, p. 536.

and familiar with the *billets d'état* issued by Louis XIV during the War of the Spanish Succession, John Law's bank notes, and Continental currency[1] — received vales reluctantly from the beginning. That Cabarrus and his associate, Aguirre, disposed of vales at a discount three days after the first were issued was openly charged at the time[2] and may well have been true. The treasurer of the military orders refused to accept three vales offered in payment of land rent in the fall of 1780 because he preferred the "usual and current money" stipulated in the contract and for the technical reason that the sum due was to be used in paying wages and salaries. Obviously preferring to pay in paper rather than in specie, the debtor appealed to the Council of Military Orders. Since the treasurer was determined not to accept vales, the dispute was carried all the way to the Privy Council (Consejo Particular), which ruled on May 10, 1781, that the paper currency must be accepted at par in this and all similar cases.[3]

At the time of the second issue, in March, 1781, vales stood four per cent below par in terms of specie. The following December François Cabarrus, commissioned by the Crown to exchange the vales in the treasury for specie on the most favorable terms possible, had to pay a premium of only 2 1/6 per cent. Patriotism in the emergency may have induced businessmen to supply the government with specie at less than the current premium, as they did on more than one occasion during the war. The doubling of the paper circulation in June, 1782, and growing pessimism over the outcome of the war drove the depreciation to 13 per cent in August. Early in September the discount was 14 per cent. The failure of a mammoth land expedition and of floating batteries against Gibraltar in the middle of the month and the relief of the besieged garrison by a British fleet in October forced vales to 22 per cent below par, but after the military crisis had passed they recovered rapidly. By the middle of November the discount at Cádiz, the great entrepot of

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1. Archivo del Banco de España, Consulta Elevada a S. M. por la Junta del Banco Nacional de San Carlos sobre la Pérdida de Valor de los Vales, 10 de Noviembre, 1794, pp. 8–9; AMH, Negociado 130, Leg. 2, Atado 4; Joseph Alonso Ortíz, op cit., pp. 147ff.

In a memorial to Count Gausa, the Finance Minister, on March 2, 1784, Francisco de Montes said: "To impute to Spanish money lenders ignorance of the fatal effects of Law's project would be to class them as ignoramuses in their profession." (AS, Secretaría de Hacienda, Leg. 359.)

2. AMH, Negociado 130, Leg. 1; AS, Secretaría de Hacienda, Leg. 358.

3. AMH, Negociado 130, Leg. 1, Atado 1.

American trade and therefore the leading bullion market, was
only 13 per cent. The armistice with England at the end of Jan-
uary, 1783, released the treasure blocked in the New World by the
British fleet during the preceding three years and ended the danger
of further issues of paper currency to meet war expenditures. In a
few weeks vales rose to within five or six per cent of par. In June,
1783, the Bank of Spain opened its doors and began to redeem
paper currency on a limited scale in special cases. Shortly after-
wards the premium on specie fell to two or three per cent, and it
continued to drop slowly as the Bank gained in financial strength
and public confidence. As late as December 29, 1785, the vales
were at a slight discount at Cádiz,[4] but I have not found a single
case in the next eight years in which they exchanged for specie at
less than par.[5]

IV

The directors argued that the Bank of Spain alone was respon-
sible for the rise of the vales to par in terms of specie, and subse-
quent writers have accepted this claim.[6] But almost three-fourths
of the recovery from the nadir occurred before March 15, 1783,
when the acceptance of vales for Bank stock (the first operation
that could have supported their value). began. From June 1 to
November 30, 1783, the first half-year that the Bank was open to
the public, only 2,314 vales were redeemed; and the redemptions
were limited to one vale per person. The favored individuals were
carefully selected by the Bank according to their economic merit,
need, record for receiving vales at par, and the possibility of using
specie effectively in their business. Although the charter specifi-
cally stated, and the directors repeatedly recognized, that the chief
function of the Bank was to combat depreciation of the paper
currency, at no time before vales reached par did the Bank redeem,

4. Without access to source materials, Fritz Rühe asserted that the
depreciation of vales completely vanished in 1783, when the Bank of Spain
began to operate. Das Geldwesen Spaniens seit dem Jahre 1772 (Strassburg,
1912), p. 35.

5. AHN, Estado, Leg. 3196, fol. 2; AS, Secretaría de Hacienda, Legs.
858-859; AGN, Reales Cédulas, Tomo 133, No. 240, fol. 426; Joseph Alonso
Ortíz, op. cit., pp. 173-175; José Canga Argüelles, Diccionario de Hacienda, I
(London, 1826 Ed.), 29; Comte de Mirabeau, La Banque d'Espagne (N.P.,
1785), pp. 13, 26-27; AMH, Negociado 130, Leg. 1, Atados 1-2; Biblioteca
Nacional del Perú, Documentos Históricos: Varios, No. 3324.

6. For example, see Pierre des Essars, "Banking in Spain," in A History
of Banking in All Leading Nations (London, 1896), III, 233.

or promise to redeem, them freely for all holders. From March 15 to November 30, 1783, the Bank earned 1,006,258½ reals on its investment in the vales received in redemptions and in exchange for Bank stock.[7] Since a vale of 600 pesos earned one real a day, the average holding of the Bank over the entire period was 3,870 vales of 600 pesos, or 7,740 of 300. Of the 600-peso vales 16,500, and of the 300-peso, 67,000, had been issued. Thus on the average the Bank held 7¾ per cent by value of the paper money outstanding.[8] This percentage was high enough to lessen the depreciation of vales, and redemption, even on a limited scale, also supported their value. But the combination of these factors was certainly not great enough to substantiate the claims of the Bank directors.

Most contemporary economists and statesmen attributed the rise of vales to the end of the war with England, the extinction of 3,334 vales of 300 pesos in July, 1785, and the punctual payment of the interest.[9] Particularly important was the armistice with England on January 30, 1783, which terminated the appreciation of specie resulting from the cessation of regular imports from the New World (to which the Spanish economy was geared) and the necessity of purchasing bullion without regard to price for external remittances connected with the war. The armistice also ended the depreciation of vales resulting from the fear of default upon the interest and from anticipation of large additional issues to meet heavy and unpredictable expenses. Facts tend to support this

7. Biblioteca Nacional del Perú, Documentos Históricos: Varios, No. 3324; AGN, Reales Cédulas, Tomo CXXXIII, No. 240, fol. 426; Tomo CXXVII, No. 51, fols. 78–113; AHN, Estado, Leg. 3196; Library of Congress, Uncatalogued Reales Cédulas, No. 24, fol. 3; Archivo del Banco de España, Secretaría, Leg. 712, No. 41.

8. Owing to the privilege of paying for stock in vales, at one time in 1785 the Bank of Spain had 89,238,325 reals of paper currency. Since the Bank report for that year failed to list separately either the amount held at the end of the year or the interest received during the year, how long the vales were kept is not clear. But apparently the Bank lost no time in liquidating its holdings. In 1788 it earned only 250,276 reals from interest on vales. Hence it held on the average considerably less than two per cent of the quantity outstanding; and on July 31, 1792, it owned only 331 vales. (Séptima Junta General del Banco Nacional de San Carlos [Madrid, 1789], Table No. 2; Décima Junta General [Madrid, 1792], p. 165.)

9. Gazeta de Madrid, 1 de Julio, 1785, pp. 415–416; Comte de Mirabeau, op. cit., pp. 13, 26–27; Joseph Alonso Ortíz, op. cit., pp. 173–177; AS, Secretaría de Hacienda, Legs. 358–359; Conde de Campomanes, op. cit., pp. 151–152; Mercurio de España, II, Julio, 1785, 261–265.

thesis, for the greatest recovery occurred shortly after the end of hostilities. Since vales were already practically at par, the retirement of 3.33 per cent by value in July, 1785, had a negligible effect. The prompt payment of interest during and after the war undoubtedly limited depreciation and hastened recovery. The rise of vales to par without the retirement of an appreciable quantity indicates that other factors influenced their specie value much more than did overissue.

V

To finance the completion of the Imperial Canal of Aragon and the Royal Canal of Tauste, Charles III secured three large foreign loans. Although the waters of the Imperial Canal had already passed ceremonially through the streets of Saragossa, the termination of this gigantic enterprise required a larger outlay than the Crown could obtain from current revenues or additional loans. Consequently an issue of 4,200,000 pesos of vales was authorized on July 7, 1785. The repayment of large advances from the treasury and three years of construction exhausted these funds; so on December 30, 1788, Charles IV (1788–1808) issued 2,400,000 pesos of vales to put the finishing touches on the canals. The canal vales bore interest at the same rate, were to be amortized in the same period, and had precisely the same monetary characteristics and privileges as the paper currency then in circulation. The chief differences were the pledge of the canal properties and of the postal receipts as security for the new vales and the specific allocation of the increased duty on wool exports for the payment of the annual interest.[1] These issues of paper money enabled Spain to complete, in 1790, the Imperial Canal of Aragon, begun by Charles V in 1529 and sporadically continued by succeeding monarchs as their means permitted.[2] Unceasing efforts by the Crown to suppress vagrancy and vagabondage suggest that the paper issues may have tapped unemployed labor to finish the engi-

1. Duke University Library — hereafter cited as DUL, Colección de Reales Cédulas, 349.46 qS733DA, Tomo III, fols. 421–426; Tomo IV, fols. 88–93; Gazeta de Madrid, 26 de Julio, 1785, pp. 481–484; José Canga Argüelles, op. cit., V, 229; J. F. Bourgoing, op. cit., II, 42; Mercurio de España, II, Julio, 1785, 283–292.

2. France admired Charles III for not allowing the staggering military expenditures during the war with England in 1779–1783 to interrupt work on the Imperial Canal (Gazette de France, 16 Août, 1782, p. 311).

neering feat, which, at least in Spanish eyes, surpassed the Canal of Languedoc, the greatest material achievement of Colbert.[3]

With its warehouses[4] full of unsalable Asiatic goods, the Philippine Company petitioned the Crown in the fall of 1790 for permission to issue up to 60 million reals of vales to tide it over the emergency. On November 19, 1790, the petition was granted; and on March 3, 1791, an issue of 3,990,000 pesos was authorized. The vales bore interest at four per cent a year and had the same monetary qualities as those previously issued. The main differences were the obligation to retire the vales from circulation in 10 years (in five equal annual installments beginning on March 1, 1797) and the fact that the interest and amortization were responsibilities of a private company.[5]

VI

After the retirement of 3,334 vales of 300 pesos in July, 1785, extinction virtually ceased during the next seven years of peace.[6] According to Marquis Zambrano's report to Count Lerena, the Finance Minister, in response to a royal order of August 11, 1791, only three of the 600-peso vales had been extinguished. Since

3. Ignacio de Asso, Historia de la Economía Política de Aragón (Saragossa, 1798), pp. 104–108; Gazeta de Madrid, 21 de Septiembre, 1790, pp. 630–631; C. W. Cole, Colbert and a Century of French Mercantilism (New York, 1939), I, 379–383; Conde de Floridablanca, op. cit., LIX, 327.

When the Imperial Canal was completed, Spanish journalists and statesmen agreed that it surpassed all others. However, an article in El Mensajero Económico y Erudito de Granada of November 21, 1796 (pp. 198–199) pleading for the construction of canals in Spain praised the canalization of the Tajo in the reign of Philip II and spoke of the canal systems of Holland, England, and Germany with admiration, but did not mention the Imperial Canal of Aragon.

4. At Madrid, Seville, Cádiz, Málaga, Valencia, Barcelona, San Sebastian, and la Coruña.

5. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1381e, fols. 802–804; Gazeta de Madrid, 8 de Marzo, 1791, pp. 169–171.

6. In 1785 José Antonio de Barbachano submitted a scheme for extinguishing 11,850 vales of 300 pesos through the sale of life annuities paying 10 per cent on 1 head, 9 per cent on 2, 8½ per cent on 3, and 8 per cent on 4. The income from the royal lottery would be used to pay the annuities. The proposal was rejected because of the "disproportion between the return and the risk on 1, 2, 3, and 4 lives," and because the Government saw little to be gained by substituting one set of creditors for another. Moreover, the profits from the lottery were required for other purposes. The finance ministry informed Barbachano that it was seeking a method of retiring vales that "will not touch the royal revenues nor burden consumption, industry or domestic trade!" (AMH, Negociado 130, Leg. 1, Atado 2bis.)

1785 only 92 of the 300-peso denomination had been retired — and most of these on July 16, 1791.[7] Hence in August, 1791, 27,647 vales of 600 pesos (including the canal issues) and 74,874 of 300 pesos (including the issue by the Philippine Company) were outstanding. The face value of all the vales, excluding accrued interest, was 39,650,400 pesos, which exceeded the average annual revenues of the Crown. The large volume outstanding, the substantial issues for public works and Philippine trade several years after the war had ended, the violation of the royal promise to retire one-twentieth of every issue each year, the failure to provide any other scheme for systematic extinction, and the refusal to levy taxes for redemption (as demanded by Cabarrus shortly after the armistice with England) — all these tended to discredit the paper currency. But they did not prevent vales from passing at or above par in terms of specie in 1786-1793 or from driving the redeemable notes of the Bank of Spain almost completely out of circulation. During practically all of this period vales actually commanded a premium. In March, 1789, for example, vales stood $\frac{1}{2}$ per cent above par at Madrid;[8] and in the last quarter of 1792 the premium was usually one per cent at Madrid, $1\frac{1}{4}$ per cent at Valencia, and two per cent at Barcelona.[9]

The high rate and the regularity of the return were primarily responsible for the appreciation of vales. In 1786-1793 the holders received the interest promptly every year,[1] and the yield was higher than on other liquid assets. For example, on March 23, 1780, Charles III offered three per cent on redeemable annuities secured by the tobacco revenues, although, he complained, private borrowers were paying only $2\frac{1}{2}$ per cent.[2] On October 4, 1781, Fran-

7. AS, Secretaría de Hacienda, Leg. 359; Mercurio de España, II, Julio, 1785, 261-265.

8. Diario de Madrid, 1789, pp. 248, 276.

9. Diario de Barcelona, 1793, pp. 1168-1476; Conde de Cabarrus, op. cit., pp. 6, 20ff; J. F. Bourgoing, op. cit., II, 42; Comte de Mirabeau, op. cit., p. 14; AMH, Negociado 130, Leg. 2, Atado 4; Archivo del Banco de España, Consulta Elevada a S. M. por la Junta del Banco Nacional de San Carlos sobre la Pérdida de Valor de los Vales, 10 de Noviembre, 1794, pp. 12-13.

1. The owners of vales were advised through notices in three consecutive issues of the Gazeta de Madrid to present them for renewal and for the annual interest, payable on certain issues in July and on others in October.

2. Library of Congress, Uncatalogued Reales Cédulas, Nos. 8, 11.

On October 1, 1799, a landed estate near Madrid that had been mortgaged for a loan at $2\frac{1}{2}$ per cent was advertised for foreclosure (Gazeta de Madrid, 1 de Octubre, 1799, p. 861).

cisco Xavier de Urreta offered to refund the vales with a loan at three per cent interest plus a commission of four per cent; but treasury officials reported that he was not trustworthy. In 1784 Francisco de Montes submitted a scheme for refunding the vales at three per cent, and Ramón Xavier de Vial was willing to lend funds for this purpose at $2\frac{1}{2}$ per cent. Apparently because the maturities were too short and the requirements for amortization too strict, neither proposition received serious consideration. The Five Greater Guilds of Madrid constantly held large sums on time deposit at from $2\frac{1}{2}$ to three per cent interest. The commission appointed in 1788 to investigate the Bank of Spain severely criticized the directors for paying four per cent on the improvements in its rented building "when houses in Madrid barely yield three per cent."[3] The greatest disadvantage of vales in the eyes of Count Campomanes was the repercussion of the "high" interest rate upon industry, agriculture, and trade. He believed that either funds would be drained from productive enterprise or the rate of interest paid by businessmen would have to rise to four per cent. As a cheap money advocate, he feared that a rise in interest rates would depress business and impede economic development.[4]

Vales were easier than specie to handle, count, and transport; but in none of these respects were they superior to the notes of the Bank of Spain. And Bank notes enjoyed the double advantage of ranging from 200 to 1,000 reals (much more convenient than the 300- and 600-peso denominations[5] of the vales) and of being redeemable in specie. Yet the volume of notes outside the Bank's vaults decreased from 32,750,000 reals in 1783 to 429,000 reals on September 13, 1794; and most of the decline occurred in 1783–1787, while vales were steadily rising in public favor.[6] Hence the premium in 1786–1793 was not due to the superior convenience of

3. Séptima Junta General del Banco Nacional de San Carlos (Madrid, 1789), "Memoria de la Comisión," p. 32.

4. AS, Secretaría de Hacienda, Legs. 358–359; AHN, Sala de Alcaldes de Casa y Corte, Lib. 1370e, fols. 435–490; J. F. Bourgoing, op. cit., II, 37–38; Conde de Campomanes, Cartas Político-Económicas, p. 152; Gazeta de Madrid, 7 de Septiembre, 1784, p. 753; Séptima Junta General del Banco Nacional de San Carlos, pp. 86–87.

5. That is, 4,517 reals 22 maravedis and 9,035 reals 10 maravedis respectively.

6. Archivo del Banco de España, Consulta Elevada a S. M. por la Junta del Banco Nacional de San Carlos sobre la Pérdida de Valor de los Vales, 10 de Noviembre, 1794, pp. 27–31.

using vales, as Rühe contended.[7] The public preference for vales over specie and Bank notes, which did not draw interest, reflected the high and dependable rate of return upon vales. When they were at a discount in 1780–1785 the *Gazeta de Madrid* was filled with advertisements for vales lost in remittance, mostly from one business firm to another. In 1786–1793 the advertisements diminished sharply in volume, and the vales that were lost bore few endorsements. In some years there were no advertisements; and often the reported losses of gold, promissory notes, and bills of exchange in transit exceeded the losses of paper currency. Beginning in 1781 tables showing the face value and accrued interest, at which vales were to pass on each day of the year, were advertised in newspapers;[8] but when they reached par the advertisements ceased. This suggests an inverse relationship between the velocity of circulation and the specie value of the paper currency. Apparently the high quotation of vales resulted largely from their attractiveness as investments.

A minor factor in the appreciation of vales in terms of specie was the loss of public confidence in the coinage that inevitably resulted from a violation of its integrity by the Crown, mint officials, and counterfeiters. On June 25, 1786, Charles III secretly instructed the mints to reduce the fineness of the *escudo*, the standard gold coin, 2.9 per cent, without a countervailing change in its weight or tariff. Coöperating perfectly, the mint officials in Spain and the Indies debased silver as well as gold by more than the specified amount; and counterfeiters valiantly seconded their efforts. The resultant depreciation of gold and silver coins tended to raise slightly the specie quotation of the paper currency.[9] The influx of treasure that had accumulated in the New World during the war with England depressed the value of bullion, but the effect upon the specie rating of vales was insignificant.

7. Op. cit., pp. 37–38.
8. For example, see Gazeta de Madrid, 21 de Agosto, 1781, p. 680; 17 de Enero, 1783, p. 64; 24 de Diciembre, 1784, p. 1052.
9. AS, Secretaría de Hacienda, Leg. 820; Juan Surrá y Rull, Breve Reseña Histórico-Crítica de la Moneda Española (Madrid, 1862), pp. 70–71; F. Altés, Traité Comparatif des Monnaies (Marseille, 1832), pp. 146–147; Pierre Frédéric Bonneville, Traité des Monnaies d'Or et d'Argent qui Circulent chez les Différens Peuples (Paris, 1806), pp. 37–38, 40–41.

VII

The paralyzing fear throughout Europe of the heresy, democracy, and disorder of the French Revolution was particularly strong in Spain, where the nobility and the clergy sat firmly in the saddle. Owing to the kinship between the two royal houses, resentment of the imprisonment and execution of Louis XVI and Marie Antoinette was more pronounced than in other European monarchies. After prolonged diplomatic tension, on March 7, 1793, France declared war on Spain. The clergy and the wealthy rushed to place military and financial resources at the disposal of the government, and the ignorant masses were easily incited to hate the popular regime in France. With an unstable government and a strong coalition facing her on the eastern front, in the beginning France was unable to resist Spanish arms. In 1793 French soil was invaded at each end of the Pyrenees, and a French offensive in the center was easily repulsed.

The military triumphs, the large donations by the Church and the nobility, the enthusiastic support of the war by the people, the inability of France to disrupt communications with the overseas dominions, and above all the traditional war-time use of mercantile credit enabled Spain to pass through almost a year of war without resort to inflation. On July 1, 1793, during the fourth month of the war, W. Short, the American Minister at Madrid, wrote the Secretary of State that "the exertions of this Country have been really great and made with a degree of facility that has astonished most people. As yet no new tax has been laid — no new loans made — public credit supports itself at a favorable point and the Minister seems confident of the public resources continuing commensurate with the public demands. . . . They say that the commencement of war expenses has ever presented the same facility from the system of anticipation used with the various contracting companies who supply everything on credit."[1]

By the end of 1793, however, the war expenditures forced the Crown to seek new revenue. Consulted as to means of financing the war "without burdensome taxes," on December 12, 1793, the Council of State recommended a new issue of vales. The Council maintained that the vales would yield more than any other possible device, that the interest payments would remain at home instead of enriching other countries, and that the current premium on paper

1. National Archives, Washington, Diplomatic Dispatches: Spain, I.

currency resulted from an inadequate quantity. The Royal Council and other advisers confirmed this recommendation on December 18; and a pragmatic of January 12, 1794, authorized an issue of 16,200,000 pesos in vales of 300 pesos. Although he believed that "the principal of the vales outstanding, including the present issue, will be less than half the annual interest on the public debts of other European countries," in order to relieve his subjects from even this small burden, Charles established a sinking fund (fondo de amortización) for the retirement of the vales.[2]

Ten per cent of the municipal property and excise taxes (propios y arbitrios)[3] and the special duty (derecho de indulto) on specie exports[4] were set aside for the sinking fund. The annual yield of the taxes and duty was estimated at a million pesos. Retirement of vales was to begin when the interest on the first issue fell due, in October, and to continue until all the paper currency, in the order of its issue, had been withdrawn from circulation. Under "no circumstances or emergency whatever" was "any portion of the sinking fund to be used for any other purpose." Holders of vales were assured that equally effective steps were being taken to prevent "a default or even a slight delay in the annual interest payments."[5]

Dwindling pressure on the eastern front, as the anti-French coalition disintegrated, permitted France to mass her forces against Spain in 1794 and reverse the course of the war. The French captured San Sebastian, threatened Pamplona, and penetrated deeply into Catalonia. The supreme effort required to prevent disaster placed a heavy burden upon the Spanish treasury. Upon a motion by Diego Gardoqui, the Finance Minister, the Council of State voted unanimously to lower the cost of the ordinary functions of government during the emergency by reducing the number of pub-

2. Correo Mercantil de España y Sus Indias, 13 de Febrero, 1794, pp. 101–102; DUL, Colección de Reales Cédulas, Tomo V, fols. 183–186.

3. On May 29, 1792, a royal decree had provided that the surpluses in municipal treasuries from the local property and excise taxes be used in extinguishing vales (AHN, Sala de Alcaldes de Casa y Corte, Lib. 1382e, fols. 1365–1371).

4. The monopoly on specie exports granted the Bank of Spain by its charter was extended for sixteen years, and the Bank was required to collect the duty and pay it into the sinking fund in the treasury.

5. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1384e, fols. 436–441; Correo Mercantil de España y Sus Indias, 13 de Febrero, 1794, pp. 102–103; DUL, Colección de Reales Cédulas, Tomo V, fols. 183–186.

lic employees to the lowest possible figure. A decree of May 2, 1794, instructed the heads of agencies to fill no vacancies when the duties could be performed by the remaining personnel, to endeavor to make unavoidable appointments from the list of pensioners, and to recommend no more employees for retirement.[6] On August 29, 1794, Charles informed the Council of State that extraordinary financing would be required to cover the entire ("past and future") cost of military operations that year. He recommended a new issue of vales as "without doubt the most effective and least costly of all the measures that have been proposed and also the least injurious to the future prosperity of the nation." If the sinking fund and the taxes to meet the service charge were proportionally increased, no harm could result. On September 8 an issue of 12 million pesos in the new denomination of 150 pesos and six million in the old denomination of 600 was authorized.[7]

To cover the interest on the new vales, the price of salt and stamped paper was raised and a tax of four per cent levied on the salaries and pensions of civil servants. With greater solicitude for the poor "who are already bearing a heavy burden," the government taxed "the rich who live upon income from property" to increase the sinking fund. The tax on land rent, hesitatingly imposed by Charles III in certain provinces on June 29, 1785, was revived and extended. Until the vales should be entirely extinguished a tax of six per cent was levied in Castile and Leon upon land rent, mortgages on real estate, and survivals of feudal dues. Rents on houses and buildings paid four per cent. Apparently because of a donation by the Church of seven million reals a year for the sinking fund and a contribution of 36 million reals a year toward the cost of the war by the regular and secular clergy,[8] existing ecclesiastical property was exempted from the tax. But subsequent acquisitions were not. The yield of the taxes for the sinking fund was estimated at two million silver pesos (or 40 million vellon reals) a year—enough to retire the current issue of vales in less than six years. The sinking fund was carefully separated from other royal revenues. Its administration was vested in the

6. Francisco Gallardo Fernández, Origen, Progresos y Estado de las Rentas de la Corona de España, IV (Madrid, 1806), 254–256.
7. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1384e, fols. 503–505; Gazeta de Madrid, 2 de Septiembre, 1794, pp. 1050–1055.
8. Gazeta de Madrid, 10 de Marzo, 1795, pp. 272–273.

Council of State, rather than in the finance ministry; and to place the money beyond the control of treasury officials it was kept in a traditional Spanish treasure chest with three locks and as many responsible key holders. The Crown promised again that the sinking fund would never be touched "for any purpose whatever, except the retirement of vales."[9]

To secure the enormous resources needed to resist French offensives in 1795, Spain again turned to vales, "without a doubt the least burdensome and most expeditious of all fiscal devices." A decree of February 25, 1795, provided for an issue of 21 million pesos in 150's and nine million in 600's, making a total of 30 million pesos. The exports of all domestic and foreign goods from Spain to America in 1784, the first year of peace after the British fleet had disrupted commerce for four years, were valued at less than 29 million pesos. Nevertheless, the government insisted that the vales were issued on a perfectly sound basis, because taxes to meet the service charge were concurrently levied. The Crown admitted that Spain was not as "rich, industrious, or commercial" as some other European countries, but affirmed that it "can pay its obligations, which if doubled would not amount to one-tenth the debt of other powers." No direct provision was made for the amortization of the vales, but on January 7, 1795, the Church had donated to the sinking fund the salaries of vacant bishoprics, dignities, and benefices in Spain and the Indies. "Loving his subjects and importuned by candidates," Charles was "naturally disposed to fill posts as soon as they become vacant; but this policy prevents the concession from being as productive as it should be for the extinction of vales." Hence a decree of August 2, 1795, provided that whenever vacancies should occur no steps might be taken to fill them for at least a year.[1]

The Basel treaty of July 22, 1795, officially terminated the war with France; but on July 31, before news of the treaty reached Madrid, the Council of State formulated plans for financing the conflict during the remainder of the year. Because "the superabundance of vales is a factor in the rise of commodity prices," a new issue was opposed. Instead the Council recommended that

9. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1384e, fols. 506–512; Gaseta de Madrid, 20 de Enero, 1795, pp. 69–70.

1. Mercurio de España, I, Enero, 1785, 77; Gazeta de Madrid, 10 de Marzo, 1795, pp. 270–275; 11 de Agosto, pp. 844–845.

240 million reals of five per cent bonds[2] be floated, with the subscriptions payable either in specie or in vales at their face value plus accrued interest. The decree authorizing the bond issue was not published until August 13, but the list remained open until half the bonds had been sold. The continuation of hostilities between France and England, the unrest that pervaded Europe, and the British resentment of Spain's negotiation of a separate peace prevented demobilization at the end of the war with France. Since ordinary revenues would not defray the heavy expenses of armed neutrality and of preparation for impending war with England, the government offered the unsold half of the five per cent loan of 1795 to the public on June 9, 1796.[3] Public dissatisfaction over depreciation of the paper currency led the Crown to consign all specie received for bonds to the sinking fund for the extinction of vales.[4]

The strong conviction that Great Britain had shirked her responsibilities as an ally in the war against France, the resentment of her smuggling in Spain and America, the widespread belief that her agents were fomenting revolt in the colonies, and the continuous depredations against Spanish shipping induced Spain to declare war on October 7, 1796.[5] Hostilities began immediately and continued until 1802. During the course of the conflict England attacked Cádiz, annihilated the Spanish navy off Cape Saint Vincent, and repeatedly threatened the Spanish dominions in America. Spain sent large expeditions of troops to aid France, and maintained an "invasion fleet" at Brest for several years at great expense. The interruption of trade with the New World by the British navy not

2. The bonds were amortizable in twelve years beginning in 1797, and prizes amounting to three per cent of the issue were to be distributed among the bond holders by lot (DUL, Colección de Reales Cédulas, Tomo V, fols. 260–261).

3. Gazeta de Madrid, 14 de Junio, 1796, p. 500.

Of the 12,000 bonds offered for sale, 1,942 had been bought by July 28, but the rate of subscription dwindled rapidly. By August 29 the sales had reached only 2,914 (Diario de Madrid, 29 de Julio, 1796, p. 854; 31 de Agosto, 1796, p. 995).   ·

4. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1385e, fols. 685–691; Lib. 1386e, fols. 1158–1160; Gazeta de Madrid, 20 de Noviembre, 1795, p. 1199; 21 de Junio, 1796, pp. 522–523.

5. The faint hope that an alliance with France might place a Spanish Bourbon on the French throne, if the Revolution should collapse, and a lack of respect for the Spanish ambassador at London were minor factors in the Spanish decision.

only deprived the Crown of a large part of its revenue but depressed important branches of agriculture, industry, commerce, and finance. As in the two previous wars, the government lacked the courage to impose adequate taxes. Possibly because of the capital accumulation resulting from the lag of wages behind rising prices[6] and the closing of the American outlet for investment, the government was able to cover its deficits for more than two years by appealing to the money market.

The 120 million reals of five per cent bonds offered the public in June, 1796, advances from the Bank of Spain, and mercantile credit financed the initial war effort. The sale of redeemable annuities at three per cent and life annuities at eight per cent secured by a lien on the tobacco revenues (authorized in 1782) was resumed at the end of 1796 and continued throughout the war. To meet "extraordinary war expenditures without burdening my beloved vassals with new taxes," Charles authorized, on July 15, 1797, an issue of 100 million reals in five per cent bonds purchasable with specie or vales. Prizes of three million reals were to be distributed among the bondholders by lot. For the principal and interest the income from stamped paper was pledged and a debenture against general revenues recognized. To reach subjects having smaller means, the finance ministry reduced the par value of the bonds to 4,000 reals. Since the issue was oversubscribed and war needs remained acute, the public was offered 15,000 more bonds on November 29, 1797, with a total value of 60 million reals. This time the demand was overestimated; for on April 15, 1799, when the subscription closed, only 11,256 bonds had been sold.[7]

In a decree of May 27, 1798, Charles declared that "the obstruction and impediments that industry and commerce are suffering in Spain, together with the detention of treasure and valuable products in the Indies, are the causes of the present extremely low yield of the royal revenues; while the outlays required for the defense, welfare, and prosperity of the realm are progressively mounting. Consequently, after having exhausted the resources derived from previous expedients, an enormous

6. See Chart I below.
7. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1387e, fols. 1005–1009, 1011–1013; Gazeta de Madrid, 21 de Junio, 1796, pp. 522–523; 21 de Julio, 1797, pp. 650–654; 5 de Diciembre, 1797, p. 1092; 3 de Mayo, 1799, p. 353; 21 de Mayo, 1799, p. 447.

deficit remains, which must be filled by extraordinary measures. The imposition of new taxes is justified by the example of other nations and by the present conjuncture." But not wishing "to resort to this last remedy without first having exhausted all others," the Crown called for donations of specie and of gold and silver jewelry in Spain and the Indies and for patriotic loans, without interest, to be amortized by lot in ten years beginning two years after the conclusion of peace. Theoretically, the donations and advances were voluntary; but the names of donors and lenders were to be published and the list "examined when nominations and proposals are made for dignities, employment, and honors." With great fanfare, obviously intended to influence his subjects, the King donated "one-half the appropriation for secret expenses and half the Crown jewels not needed for religious services and the maintenance of royal decency." The government undoubtedly pressed hard for gifts and loans in both Spain and America. The contributions of rich and politically ambitious Creoles were surprisingly high, but British sea power largely prevented Spain from utilizing the financial assistance of the colonies to command real resources in Europe. Needing additional revenues and still unwilling to tax, the government offered the public a four hundred million real bond issue on October 17, 1798. The decree provided that if a fourth of the bonds should not be sold by the end of the following April the list would be closed. The goal was not reached, and the subscriptions were suspended. This failure ended the efforts of the government to pay for the war through bond issues.[8]

By 1799 the war-time decline of commerce had reduced royal revenues below the ordinary cost of government and to considerably less than half the total expenditures. At the beginning of the year the Royal Council was instructed to prepare as expeditiously as possible a systematic plan for rigid economy in all branches of the public administration with a view to equating ordinary expenses with ordinary revenues. The Council was also directed to propose emergency levies which should tax ability to pay and not destroy incentive. To cover the cost of military and naval operations until additional funds could be extracted from taxpayers and payments to vested interests could be curtailed, a decree of April 8,

8. Gazeta de Madrid, 26 de Junio, 1798, p. 478; 3 de Mayo, 1799, pp. 352–353; AHN, Sala de Alcaldes de Casa y Corte, Lib. 1388e, fols. 1003–1008, 1011–1013.

1799, provided for an issue of 53,109,300 pesos of vales, with one-half by value in 300's and the remainder in 600's. This issue exceeded the total revenues of the Crown in 1799 by approximately 25 per cent. For the service charge it was necessary to dip heavily into the sinking fund for the extinction of vales, which only five years before the Crown had promised never to touch for any other purpose.[9]

Forced to resort "to the last remedy" to finance the war, on November 12, 1799, Charles IV levied upon the municipalities a tax of 300 million reals a year for the duration of the conflict, permitting them to raise their quotas, based upon the wealth of each locality, through any form of taxation that would not oppress the poor.[1] The new levy fell far short of the current annual deficit, but large loans in Amsterdam in 1799-1800 helped to bridge the gap.[2] No further issues of paper currency occurred.

Since 1780 a total of 157,899,200 pesos of vales, including the issues of the Imperial Canal and Philippine Company, had been put into circulation. Stock in the Bank of Spain and the bonds floated since the outbreak of war with England were purchasable with vales; but the government immediately spent the paper currency it received, and the Bank held its receipts a very short while. The Bank earned only 44,097 reals 30½ maravedis from interest on vales in 1800,[3] for example; so the average quantity held amounted to only 73,210 pesos, or .046 per cent of the paper money that had been issued.

The available records of the redemption of vales are neither complete nor accurate. The extinctions officially announced in advance by the *Gazeta de Madrid* were not unfailingly carried out, and the *Gazeta* did not always list subsequently those actually executed. The best records of redemptions kept by the finance ministry that I have been able to find are not systematic or clear. Particularly haphazard and irregular are the accounts of extinctions through the confiscation of vales not presented for renewal; and hard-luck stories often induced the Crown to restore the invali-

9. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fols. 380-383; Gazeta de Madrid, 30 de Abril, 1789, pp. 339-342; Hermann Baumgarten, op. cit., I, 108-112; Francisco Gallardo Fernández, op. cit., IV, 258-261.

1. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fols. 459-461.

2. AGN, Reales Cédulas, Tomo CLXXIX, No. 86, fol. 118.

3. Decimanovena Junta General del Banco Nacional de San Carlos (Madrid, 1801), p. 42.

dated paper. A further complication arises from the fact that extinguished vales were sometimes paid out again by the treasury. Nevertheless, critical use of all the sources available enables one to determine the quantity of vales retired from circulation with fair accuracy.

As I have stated, redemptions began with the retirement of 1,000,200 pesos in July, 1785, as soon after the close of the war with England as the financial condition of the treasury permitted. Then extinctions virtually ceased during eight years of peace and prosperity. By August 11, 1791, the total was only 1,031,400 pesos; and no vales were retired in the next three years. In October, 1795, when the first renewal of vales after the close of hostilities with France fell due, the sinking fund that had begun to accumulate under the statute of January, 1794, was used to redeem 1154 of the 600's. Sixteen more were confiscated for failure to renew them. The total extinction amounted to 702,000 pesos. In October, 1796, 1,734,000 pesos were retired; 1,501,200 pesos in October, 1797; 2,284,350 pesos in October, 1798; and 360,000 pesos in March, 1799.[4] The total extinctions before April, 1799, amounted to only 7,612,950 pesos — a pathetically small fraction of what the various decrees issuing vales had promised.

Since 153,909,300 pesos, exclusive of the private issue by the Philippine Company, had been put into circulation, the extinctions left 146,296,350 pesos outstanding. The decree issuing vales in April, 1799, estimated that the service charge on the quantity outstanding would be 87,899,799 reals 25½ maravedis.[5] At four per cent this represents 145,915,950 pesos, a figure that agrees closely with the estimate reached by subtracting known extinctions from the total issued. The 146 million pesos of vales in circulation exceeded the money of every description struck in the mints of peninsular Spain in the preceding three decades and was far greater than the total revenues of the Crown in any three previous years of Spanish history. Small wonder that the vales depreciated

4. AS, Secretaría de Hacienda, Leg. 359; AMH, Negociado 130, Legs. 1-2; Gazeta de Madrid, 1 de Septiembre, 1794, pp. 921-922; 5 de Enero, 1796, p. 22; 20 de Enero, 1797, p. 58; 3 de Octubre, 1797, pp. 846-847; 18 de Enero. 1799, p. 59; 29 de Enero, 1799, pp. 90-91; Correo Mercantil de España y Sus Indias, 12 de Septiembre, 1796, pp. 582-583; Mercurio de España, II, Julio, 1785, 261-265.

5. AMH, Negociado 130, Leg. 2, Atado 4; Gazeta de Madrid, 30 de Abril, 1799, pp. 339-342.

severely, absorbed official attention that might well have been devoted to the grave problems of international politics in a chaotic world, and finally led to a complicated structure of new taxes, which the paper currency was largely designed to prevent.

VIII

No continuous quotations of vales in terms of specie in any city for 1793–1800 have been found. But fairly accurate and continuous quotations have been secured from the Correo Mercantil de España y Sus Indias, Diario de Barcelona, Diario de Madrid, the records of the Bank of Spain, and the accounts kept by brokers commissioned by the finance ministry to purchase specie for remittance abroad or to buy vales in order to peg their price. The weakest links in the series are 1795, the last three-quarters of 1799, and 1800.

In the last quarter of 1792 vales commanded a premium over specie ranging from seven-eighths to one per cent at Madrid, one to one and one-quarter per cent at Valencia, and one and three-quarters to two per cent at Barcelona. The year 1793 opened with the premium at one per cent at Madrid and one to one and one-quarter per cent at Valencia; but by the end of January the strained diplomatic relations with France had lowered the premium to five-eighths per cent at Madrid, the only financial center for which quotations are available, and by February 8 vales had fallen to par. They remained there through March 31, despite the outbreak of war with France on March 7. The avoidance of monetary inflation and the victorious military campaigns in the summer of 1793 raised the paper currency above specie again. In the last quarter of 1793 the premium at Barcelona ranged from one to one and one-quarter per cent. It was one and one-quarter per cent at Valencia on December 24 and at Madrid on January 3, 1794. For five days after the heavy issue of vales on January 12, 1794, the paper currency commanded a premium of one-half per cent at Madrid, but it had dropped to par by January 30 in the capital and by February 8 at Barcelona. Vales remained steadily at par in both cities through March 31.

For reasons that are not clear the quotations of the Canal vales ranged from one-quarter to three-quarters per cent below those of regular vales in 1792–1793. The only explanation that I can offer is that the revenue from the Imperial Canal of Aragon was being

used for further construction after the Canal had been "finished,"[6] rather than for the service charge and extinction of the vales.

Quotations of vales in terms of specie from April 1, 1794, to late in December, 1795, are lacking. Through a comparison of foreign exchange rates at Madrid and Cádiz, apparently quoted in terms of vales, with the same rates at Barcelona and Málaga, which seem to have been in terms of specie, one can guess at the depreciation of the paper currency in May to August, 1794. Apparently the discount on vales was about one and one-half to two per cent in May and two to three per cent in June to August. One must bear in mind that these are not calculations but guesses controlled by long series of exchange rates. The large issues of paper currency on September 8, 1794, and February 25, 1795, together with stunning military reverses in 1794–1795 led to serious depreciation. By September 13, 1794, vales had fallen sufficiently to cause the Crown to consult the officials of the Bank of Spain as to causes and remedies.[7] The reappearance of advertisements for lost vales in the newspapers and the publication of tables showing the accrued interest from day to day indicate that a loss of confidence was driving vales from investment portfolios into active circulation.[8] In a memorandum presented to the finance minister on April 1, 1799, a well informed anonymous writer estimated that the discount had reached 19 per cent during the war with France that ended on July 22, 1795.[9] Writing in the summer of 1795, Joseph Alonso Ortíz, a good economist and an accurate observer, placed the maximum depreciation at 22 per cent.[1]

Although direct quotations of vales in terms of specie are not

6. AMH, Negociado 130, Leg. 2, Atado 4.
On January 30, 1794, the Canal vales rose to par with specie and with regular vales at Madrid.
7. Archivo del Banco de España, Consulta Elevada a S. M. por la Junta del Banco Nacional de San Carlos sobre la Pérdida de Valor de los Vales, 10 de Noviembre, 1794.
8. Gazeta de Madrid, 23 de Septiembre, 1794, p. 1147; 17 de Octubre, p. 1251; 25 de Noviembre, p. 1397; 23 de Diciembre, p. 1502; 13 de Enero, 1795, p. 51; 6 de Febrero, pp. 154–155; 17 de Marzo, p. 307; 14 de Abril, p. 406; 12 de Mayo, pp. 510–511; 9 de Junio, p. 616; 10 de Julio, p. 736; 4 de Agosto, p. 827; 22 de Septiembre, p. 1003; 23 de Octubre, p. 1095; 20 de Noviembre, p. 1201; 8 de Diciembre, p. 1261.
9. AMH, Negociado 130, Leg. 2, Atado 4.
1. Op. cit., p. 174.
José Canga Argüelles, an economist who was also an eye witness but a much less accurate observer, listed 14 per cent (op. cit., V, 29).

available from January, 1796, through August, 1797, the deprecia-tion can be ascertained with considerable accuracy from the abundant foreign exchange rates, in specie and in paper currency, published for particular Spanish money markets by the Correo Mercantil and the Diario de Madrid. Peace with France in July, 1795, and the extinction of 702,000 pesos of vales in October raised their specie value. But the large quantity of paper currency, the unrest throughout Europe, and the diplomatic tension with Eng-land prevented vales from rising to par, as Ortíz predicted[2] and as they had done after the conclusion of peace in 1783. Probably influenced by the utter collapse of the assignats at this time, the discount on vales was about 14 per cent late in December, 1795, and 12½–15 per cent in January, 1796. The depreciation was 9–13 per cent in February, 7¾–8½ per cent in March, 8½–10 per cent in April, 7–8½ per cent in May–June, and 8–10½ per cent in July. The impending war with England forced the discount to 13–16 per cent in August–September. From the declaration of war, on October 7, to the end of the year the depreciation ranged from 15 to 18.5 per cent.[3] The appearance in January, 1797, of a Spanish translation of Thomas Paine's Decline and Fall of the English System of Finance, with its lurid predictions of England's dis-appearance in a sea of paper currency,[4] and the annihilation of the Spanish fleet off Cape Saint Vincent in February forced vales to a discount of 18–19 per cent in January–February and 19–20 per cent in March–April. Recovering sharply, the paper currency was only 16 per cent below par in May–June and 13½–15½ per cent in July–August.

The scramble for coin by members of the armed forces paid in paper and the use of vales by the treasury for quick purchases of specie in a single market for military and naval operations in foreign theaters abruptly depressed the paper currency from time

2. Op. cit., p. 177.

3. J. F. Bourgoing, the French Ambassador at Madrid, said that "toward the middle of 1796 the vales were at a discount of 10 to 12 per cent near the frontier and six to eight per cent in the capital. Later, when war with England was imminent, they depreciated by 18 per cent (op. cit., II, 42–43).

4. Gazeta de Madrid, 24 de Enero, 1797, p. 68.

A picture of Paine was published for sale with the book (ibid., 31 de Enero, p. 88). The suspension of specie payments by the Bank of England at the end of February seemed to be the first step in the chain of events predicted by Paine and thus intensified the lack of confidence in vales inspired by his book.

to time. To prevent these fluctuations, the government commissioned the Bank of Spain and licensed brokers to purchase specie in widely scattered money markets over long periods. These agents also bought vales to support quotations that were sagging beneath speculative movements or unusual financial and commercial transactions. Their accounts from September, 1797, through February, 1799, have been preserved;[5] and from October, 1797, to December, 1798, the Correo Mercantil published bi-weekly quotations of vales in terms of specie at Madrid, Barcelona, Cádiz, and other leading money markets. Hence the data on the depreciation of vales for the eighteen months beginning in September, 1797, are particularly rich and reliable.

"To give further proof of integrity and purity" in handling the sinking fund for vales, on September 12, 1796, the government began to publish the annual yield of the taxes set aside for the purpose.[6] Owing to this policy, the utilization "for the urgent needs of the Crown"[7] of 9,412,943 reals eight maravedis of the funds earmarked for the extinction of vales in October, 1797, could not be kept secret. Consequently, vales fell from a discount of 15–16 per cent at Madrid, 14¾–16¼ per cent at Valencia, and 16¾ per cent at Cádiz in September, 1797 to 17¾ per cent at Madrid, 19–20 per cent at Cádiz and Málaga, and 20–21 per cent at Barcelona in October. Rising a little, in November vales were 16–16¾ per cent below par at Madrid, 18–18¾ per cent at Cádiz, 17½–19 per cent at Barcelona, and 19½–20½ per cent at Málaga. Only slightly greater, in December the depreciation was 16–17¼ per cent at Madrid, 18–19½ per cent at Barcelona, 18¼–20 per cent at Cádiz, and 19–20 per cent at Málaga.

In spite of active speculation by professional bullion brokers and other traders in 1798, the rates of depreciation varied widely between different localities. Except for the peaks in certain bullion markets, resulting from heavy purchases by the treasury

5. Archivo del Banco de España, Secretaría, Legs. 715 and 728; AMH, Negociado 130, Legs. 1–2.

6. Correo Mercantil de España y Sus Indias, 12 de Septiembre, 1796, pp. 582–583.

The taxes collected for the sinking fund in this year amounted to 25,653–109 reals 5½ maravedis, or almost two million vellon pesos. Many of the taxes had not been in operation during the whole year, and many others were added after this year. In 1797 the taxes yielded 32,019,813 reals 13 maravedis (Gazeta de Madrid, 3 de Octubre, 1797, pp. 846–847).

7. AMH, Negociado 130, Leg. 2, Atado 1.

at the beginning and end of the year, and for a slight recovery of vales in April, there were no great fluctuations in the rate of depreciation. Neither the sequestration of a large portion of the sinking fund in July nor its restoration with interest in October (along with the funds "borrowed" the previous year)[8] had a marked effect. In January the discount on vales was 16 per cent at Bilbao, $17\frac{1}{2}$–$19\frac{3}{4}$ per cent at Madrid, $19\frac{1}{2}$–21 per cent at Málaga, 20–$20\frac{1}{2}$ per cent at Barcelona, and 23–25 per cent at Cádiz, where the government was acquiring specie on a large scale for military purposes. Heavy purchases of bullion by the treasury forced the vales to a discount of $19\frac{1}{2}$–21 per cent at Madrid in February and to 18 per cent at Bilbao, 21 per cent at Málaga, and $21\frac{1}{2}$ per cent at Madrid in March. The government continued to buy bullion actively at Cádiz, but the depreciation dropped to 22–$23\frac{3}{4}$ per cent in February and rose to only $23\frac{3}{4}$–24 per cent in March. Reflecting a sharp diminution in the purchases of specie by the treasury in April, the discount fell to 16 per cent at Bilbao, $17\frac{1}{2}$ per cent at Madrid, 18–19 per cent at Málaga, and $20\frac{1}{2}$–$22\frac{1}{2}$ per cent at Cádiz. At Barcelona the depreciation ranged from 21 to 23 per cent. From May through October the discount remained remarkably stable at $18\frac{1}{2}$–$19\frac{1}{2}$ per cent at Bilbao, Málaga, and Madrid and $19\frac{1}{2}$–$20\frac{1}{4}$ per cent at Cádiz. Vales fell from 23 per cent below par at Barcelona in May–June to 24 per cent in July and $25\frac{1}{2}$ per cent in August. Emergency buying of specie by the treasury pushed the discount on vales to 20–21 per cent at Cádiz and $20\frac{3}{4}$ per cent at Madrid in November and to 24–$24\frac{1}{2}$ per cent at Cádiz, 26 per cent at Barcelona, and 28 per cent at Madrid in December. Yet the treasury was able to procure specie with vales at Saragossa in December at a discount of 19–21 per cent and at Seville at $20\frac{1}{4}$–$20\frac{1}{2}$ per cent.

Attributing the sharp decline of vales at the end of 1799 to competitive bidding by the multiple agents of the army, navy, and treasury, the government, on January 7, 1799, concentrated all future exchanges of vales for specie in the hands of a single broker.[9] In January–February the agent chosen by the Crown to present a united front in the bullion markets had to dispose of vales at a discount of 23–$24\frac{1}{2}$ per cent at Seville, $25\frac{1}{2}$–26 per cent at Málaga, and 25–27 per cent at Cádiz. The precise rates of depreciation

8. AMH, Negociado 130, Leg. 2, Atado 1.
9. AMH, Negociado 130, Leg. 2, Atado 3.

after February, 1799, are not available. A project for reforming the paper currency, submitted to the finance ministry in April by an economist who had carefully studied the course of depreciation, reported that vales were 43 per cent below par. Since the government had been forced to dip into the sinking fund to pay troops late in March, and the quantity of vales in circulation had risen more than 50 per cent with the issue on April 9, they doubtless fell precipitately and may have depreciated by as much as 43 per cent. On August 9 Agustín de la Puente wrote the finance minister from Murcia that "a man is offering vales today at a discount of 20 per cent";[1] but obviously this was an off quotation in an isolated market. That vales had not recovered to this extent is shown by the frequence and severity of the measures adopted in the summer of 1799 to combat depreciation. A royal decree of April 7, 1800, admitted that "vales are rated by the general public at one-half of their value or less."[2]   But the bottom had not yet been reached. Writing in 1802, Bourgoing said that vales had fallen to a discount of 75 per cent in 1801;[3] and the officers of the Bank of Spain told the meeting of stockholders in 1802 that during the preceding year "fear and usury had driven so much money into hiding that the paper currency lost 75 per cent of its value."[4]

IX

With the possible exception of a delay in July, 1798, the interest on vales was paid promptly; but inasmuch as the protracted lag of wages behind prices had raised business profits and the interest rate, the four per cent return was no longer attractive. In 1786 the Bank of Spain had raised its discount rate to four and one half per cent at Madrid and five and one half per cent at Cádiz, and government bonds paying five per cent were available after July, 1795. Stock in the Bank of Spain had paid dividends averaging well above four per cent; and the public expected high yields on the securities of the Philippine Company and of several maritime insurance firms after the war. Poor harvests occurred, but reserves were not depleted, and imports into the regions not normally dependent upon foreign sources did not prove necessary.

1. Ibid., Leg. 2, Atado 4.
2. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1390e, fols. 1703–1704.
3. Op. cit., II, 43.
4. Ramón Santillán, Memoria Histórica sobre los Bancos Nacional de San Carlos, San Fernando, Isabel II y de España (Madrid, 1865), I, 79.

The sharp decline in the imports of merchandise for shipment to the colonies partially counterbalanced the diminution of treasure imports from America during the war with France in 1793-1795 and with England after October, 1796. Nevertheless, contemporary economists and statesmen agreed that the scarcity of specie resulting from the interruption of trade with America pressed vales downward.

'The chief factors in the depreciation of the paper currency in 1794-1800 were overissue, the threat of unstable government under Charles IV and the favorite Godoy, the example of the assignats and of Continental currency, the wide circulation of Thomas Paine's book predicting the collapse of the pound sterling, followed immediately by the suspension of specie payments in England, and the fear that war would induce further inflation and divert funds from the service charge and extinction of vales. The large denominations of the paper currency limited its use and thus tended to lower its specie value.[5] Quick purchases of large amounts of specie by the government to pay the armed forces and to support military and naval operations abroad affected both the rate of depreciation and the wide differentials between localities that occasionally arose. The discount was often considerably lower at Bilbao, Saragossa, and Madrid than at Cádiz, Málaga, and Barcelona, to which the government had to resort for large sums of specie on short notice. Furthermore, the Mediterranean ports suffered a loss in exports and had to have specie for their normal grain imports, regardless of the broken contacts with the American mines.

X

The government struggled incessantly against the depreciation of vales, and the intensity of the efforts varied directly with the extent of the decline. Contraction of the redundant circulation was the first and most persistent weapon. Before the end of 1795 one tax after another had been assigned to the sinking fund established in January, 1794: the duty on silver exports, a tenth of the local property and excise taxes, a surtax on salt, a levy of six per

5. Joseph Alonso Ortíz argued that the large denominations reduced the velocity of circulation and thus sustained the value of the paper currency (op. cit., pp. 178-183); but he was thinking in terms of domestic purchasing power. Even in this case the slow velocity resulting from the inability to use vales tended to lower their subjective value and to cause them to be offered for goods, when this was possible, on less favorable terms. Ortíz also contended that the interest on vales supported their value (ibid., pp. 188-189).

cent on land rent, a donation of seven million reals a year from the Church, the income from vacant ecclesiastical posts, and fifteen per cent of the value of entailed estates and of real property acquired by the Church. On February 26, 1798, the sinking fund was transferred from the treasury to the Bank of Spain. In 1798 the government decreed that all real estate held as investments by hospitals, orphan asylums, poor houses, and the colleges in the Universities of Salamanca, Alcalá de Henares, and Valladolid should be sold and the proceeds loaned to the sinking fund. Holders of entailed estates were authorized to sell them and deposit the capital in the sinking fund, and judges were required to place there all sums involved in bankruptcies or subject to protracted litigation. Municipalities were forced to lend it half of any surplus held from local property and excise taxes. The interest rate on loans and deposits was only three per cent. A tax on collateral inheritance also went into the sinking fund; and in 1799 it was assigned the profits from a new lottery, license fees from hotels, bars, and gambling houses, and a sharply progressive levy on servants, carriages, and horses and mules used for pleasure. In 1800 certain customs duties were raised in order to increase the sinking fund. Although vales did not circulate in America, the taxes for their retirement were collected throughout the Empire.[6]

Beginning in 1795 the sinking fund was used to extinguish vales, but by 1799 less than five per cent had been retired, whereas the decrees issuing them had promised that this amount would be extinguished every year. Obviously such a scale of operation could not restore the paper currency.

Recognizing the futility of amortization at the attainable rate, the government concocted an ambitious plan for redemption. A decree of July 17, 1799, provided for the establishment of Discount Offices (Cajas de Descuento) in the fourteen leading cities to redeem vales on demand. The treasury subscribed for one-tenth of the capital of 165 million vellon reals. If the public failed to take the remainder, the rich were to be forced to subscribe for it in proportion to their wealth. Only two weeks were allowed for the

6. Archivo Histórico Nacional, Bogotá, Reales Cédulas, No. 01,219, fols. 134–137; Correspondencia del Ministerio de Hacienda: Secretaría No. 2, fol. 128; AGN, Reales Ordenes, Tomo V; Reales Cédulas, Tomo CLXV-B, No. 154; Tomo CLXXIX, No. 130, fol. 183; José Canga Argüelles, Memoria Leida en las Cortes el 14 de Diciembre de 1811 (Cádiz, 1812), p. 56; Semanario de Salamanca, 8 de Abril, 1800, pp. 236–240; 24 de Mayo, 1800, pp. 56–59.

voluntary or involuntary sale of the stock, and the Discount Offices were to begin operations on August 1. To increase the resources for redeeming vales, they were given the right to issue 330 million reals of non-interest bearing notes, redeemable on demand, receivable for all public dues, and legal tender in payments to businessmen. Upon written application the Discount Offices would redeem vales at the newly established legal discount of six per cent,[7] when specie was needed for retail trade, for business use that paper currency would not meet, or for exportation provided a permit had been secured. A vale presented for any other purpose would be confiscated.[8]

On July 23 the government admitted that the Discount Offices could not be established by August 1.[9] The directors of the Office at Barcelona announced on August 30 that its doors would open, with extremely slender resources, on September 2. In Spain's wealthiest city the public had not subscribed, or been forced to subscribe, "even nearly as much capital" as the tenth provided by the Crown. With a strong appeal to patriotism, the public was implored not to injure others by evading the law against unnecessary applications for redemptions.[1] By late September the Discount Office at Madrid had secured funds for redemptions on a meager scale. Since "the stampedes to take places early in the lines that have formed have caused many riots, and places taken at dawn are being sold," special police protection was requested on September 26.[2] On November 8 the Office announced that large denominations of vales would be redeemed in small ones without a commission.[3] With this offer the Discount Offices disappeared from view, and before the end of the year the extinction of vales apparently reverted to the treasury. Obviously the resources were too feeble to support the quotation of vales; and owing to the rigid restrictions on redemption announced from the beginning, the scheme probably tended to weaken public confidence in the paper currency.

7. Actually the Offices sold vales at a discount of six per cent and bought them at a discount of 6½ per cent (Gazeta de Madrid, 10 de Septiembre, 1799, p. 801).
8. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fols. 404–411.
9. Gazeta de Madrid, 23 de Julio, 1799, p. 663.
1. Gazeta de Madrid, 10 de Septiembre, 1799, pp. 799–802.
2. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fol. 1226.
3. Gazeta de Madrid, 8 de Noviembre, 1799, p. 968.

Throughout the ages inflation-minded ministers have attributed currency depreciation to speculation. The Spanish government was no exception, and the thesis found support in unofficial quarters. Consulted concerning depreciation, on November 10, 1794, the officers of the Bank of Spain maintained that speculation was an important cause.[4] In a report to Diego Gardoqui, the Finance Minister, on June 1, 1795, Marquis Hormazas ascribed the decline of vales largely to speculation. In 1796 Joseph Alonso Ortíz argued that the machinations of speculators were a leading factor in the discount on vales. Although not naïve enough to believe that such a law could be strictly enforced, he advised the government to prohibit speculation.[5] On March 6, 1797, Pedro Varela, the Finance Minister, informed the Prime Minister, Godoy, that representatives of the Five Greater Guilds of Madrid had recommended that only licensed brokers be permitted to act as intermediaries in transfers of vales.[6]

Two years later the Crown adopted this policy. A decree of April 8, 1799, affirmed that "men who having abandoned callings useful to society and not being restrained by honor or virtue are the instruments that speculators employ for the nefarious, cunning, and perfidious 'maneuvers through which, to satisfy their greed, they degrade the paper money of the State, notwithstanding the religious punctuality with which interest is paid, a part of the capital is amortized, and other promises are fulfilled." To end this "abuse," the decree provided that only the licensed brokers in each locality might serve as intermediaries in the negotiation of vales. Any other person who "under any pretext" acted as a broker or intermediary in a transfer of vales became liable to four years of exile for the first offense and four years in prison for the second. Licensed brokers were required to keep complete records of all their transactions, with a view to their use as incriminating evidence. For the same purpose the law provided for the confiscation of vales found without endorsements unmistakably disclosing their ownership.[7] As Ortíz foresaw, the law was not

4. Archivo del Banco de España, Consulta Elevada a S. M. por la Junta del Banco Nacional de San Carlos sobre la Pérdida de Valor de los Vales, 10 de Noviembre, 1794.

5. Op. cit., pp. 217–218.

6. AMH, Negociado 130, Leg. 1.

7. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fols. 385–387; Gaceta de Madrid, 30 de Abril, 1799, pp. 342–343.

enforced. Had it been enforced, it might have affected the peaks and troughs, but certainly could not have changed the course of depreciation.

In desperation the government turned to the Church. A royal order of May 1, 1799, affirmed that "the King is convinced that with the support of the respectable bodies that compose the ecclesiastical estate his Majesty can . . . reëstablish the credit of the paper currency in short order and consequently restore the natural prices of the merchandise and produce, the alteration of which is destroying agriculture, industry, and commerce." Patricio Martínez Bustos, Commissioner General of the Crusade (Cruzada) was directed to call leading prelates to Madrid to formulate plans for taking over the revenues earmarked for the service charge and retirement of vales. On June 10 fourteen prominent ecclesiastics assembled at Madrid under the presidency of Martínez Bustos, and the sessions continued until late in July. Very early in their deliberations the dignitaries informed Miguel Cayetano Soler, the Finance Minister, that they preferred to combat depreciation without the tax on silver exports, in order to avoid the appearance of having a financial interest in denuding the kingdom of money. Neither did the Church want the tax on collateral inheritances, to which considerable odium was attached because it disclosed the sizes of fortunes and often affected the credit ratings of mercantile firms. Believing that it was wrong to force eleemosynary institutions to sell income-yielding property and lend the proceeds to the sinking fund, the Church rejected this resource. The tax of fifteen per cent on mortmain and entailed estates was refused because of its low yield. The Church was selling land instead of buying it, and few families had the million reals of property required as a minimum for entailment.[8]

On July 27 a formal plan was printed for submission to the governing bodies (cabildos) of the cathedrals and collegiate churches. Beginning on January 1, 1800, the Church was to administer the funds for the annual interest and retirement of vales for a period of thirty years, or longer in case the paper currency had not been extinguished.[9] The treasury would reimburse the Church for the actual expenses incurred, and a substantial reduction in the cost of administration and increase in the yield of the taxes

8. AMH, Negociado 130, Leg. 2, Atado 4.
9. DUL, Colección de Reales Cédulas, Tomo V, fols. 202-215.

were expected from greater efficiency in operation. On August 21 Martínez Bustos informed Cayetano Soler that the archbishops, bishops, cathedrals, and collegiate churches had approved the plan. But on October 18 Cayetano Soler wrote Martínez Bustos that his Majesty could not accept the offer, because "it does not fully meet his principal objective" and because "circumstances have changed so much since the plan was begun. With the great diminution in its income resulting from the war, the treasury has found itself without funds to maintain the army and the navy in Spain and at Brest, and has been obliged to use for this purpose the revenues for vales from ecclesiastical sources and the sums loaned the sinking fund by the colleges. The other funds [for vales] have been used to cover with penury the remaining obligations of the state, which increase and become more pressing every day."[1] Since the Crown had collaborated closely and continuously with the prelates in formulating the plan and had formally approved it on the same day that a majority of the cathedrals and collegiate churches accepted it, the failure of the scheme to meet his Majesty's "principal objective," whatever that may have been, probably shrank into insignificance beside the imperative war-time need for the funds the Church was to administer.

· The age-old penchant for trying to cure economic ills by passing laws against them was too strong for the Spanish government to resist. The prohibition of discrimination against vales in the decree of September 20, 1780, authorizing the first issue, was not even respected by the government. In 1781–1783 the treasury repeatedly exchanged vales for specie at a discount. Before June 1, 1795, the Court of the Merchant Guild (Tribunal del Consulado) at Valencia ordered a merchant who had exercised the statutory privilege of paying vales for a cargo of wheat bought in terms of specie to pay the difference between coin and paper. Guilds and public officials in other cities agreed that the decision conformed to business practice in their localities. On February 17, 1797, Godoy asked Varela whether it would be advisable to prohibit the prevalent stipulation of specie payments in business contracts and to suppress exchanges of vales for specie at less than par. Before replying, on March 6, Varela consulted the Philippine Company, the Five Greater Guilds of Madrid, the Bank of Spain, and the Council on Commerce and Money (Junta de Comercio y

1. AMH, Negociado 130, Leg. 2, Atado 4.

Moneda). All opposed the proposed legislation and urged that vales be allowed to seek their own level.[2]

Nevertheless, on July 17, 1799, contracts or agreements stipulating payment in specie were forbidden. The government also legalized a discount of six per cent on vales — only a small fraction of the current market rate — and absolutely prohibited "the least distinction between gold, silver, and vales in any payment whatever." In addition to the severe penalties provided in 1780 (which, the Crown admitted, had never been applied) vales offered at less than par would be confiscated.[3] Despite stiff diplomatic protests, at least one American merchant residing in Spain was forced to accept paper currency at the official rate in the settlement of a specie obligation; and Parisian merchants dealing with Spain took the law seriously enough to publish an agreement to boycott any businessman who paid in vales a bill of exchange or any other debt in terms of specie without including the differential at the market rate.[4] Since the Discount Offices were supposed to redeem vales on demand, the paper currency became legal tender in retail trade and for the payment of wages, salaries, and pensions — from all of which it had hitherto been excluded. But the denominations were entirely too large for retail transactions, and the dearth of specie in the treasury was already forcing public servants and pensioners to accept paper.

The prohibition of specie contracts and of discrimination between coin and paper at the legal tariff had even less effect. On December 26, 1799, a royal steward sold two of the King's mules at Alcalá de Henares for six thousand reals. When the mules were delivered, the purchaser paid two vales of one hundred fifty pesos and the remainder in coin. The steward took the vales under protest and appealed to the King. After consulting his ministers, the King ruled, on January 4, 1800, "that the seller of any article has a right to require the purchaser to state the type of money in which he will be paid and, with respect to it, to lower or raise his price so that the object will be in a just proportion to it. The decree of July 17 of last year does not sanction bad faith on the part of buyers who take advantage of it by driving bargains in

2. AMH, Negociado 130, Leg. 1.
3. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1389e, fols. 404–409; *Gazeta de Madrid*, 23 de Julio, 1799, pp. 665–675.
4. AMH, Negociado 130, Leg. 2, Atado 4.

terms of specie and falling down on them [by paying vales] when they settle, thus making an inordinate gain under the shelter of the law."[5] On April 7, 1800, the government admitted that vales were passing generally at half of their value or less, and issued a decree, based on the ruling of January 4, requiring buyers "to indicate the kind of money they intend to pay before sellers quote their prices, in order that they may allow for the difference between coin and paper." When debtors against whom judgments were executed had no assets except vales, they were to be reduced to specie at the market rate.[6] Thus the government openly abandoned its efforts to control depreciation through fiat.

A decree of September 1, 1800, declared that the seven issues of vales were a legitimate debt of the Crown, and that in case the pledged revenues should ever prove deficient for the payment of interest and amortization of the principal, it would be responsible for the deficit without limit of time or regard to circumstance.[7] But the treasury was too empty, the monarchy had defaulted on its debts too often, and Charles IV had raided the sinking fund too heavily for the debenture of the Crown to inspire confidence in the paper currency.

XI

Incomparably more important than the depreciation of vales in terms of specie was the behavior of prices and wages in terms of money of account. To throw light upon this problem, index numbers of commodity prices and money wages have been constructed for New Castile, the great central region that contained the capital and a large part of the national economic life. The price quotations have been taken from the account books of the Venerable Orden Tercera Hospital at Madrid and the Tavera Hospital, the Casarrubios del Monte Convent, and the Domínicos de San Pedro Monastery at Toledo. To avoid distortion by differences in transportation costs, quotations from different sources have not been combined. Prices current published in the Correo Mercantil and the Diario de Madrid have been used as controls. The price indices include forty articles.[8] In the absence of reliable

5. DUL, Colección de Reales Cédulas, Tomo V, fols. 317–319.
6. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1390e, fols. 1703–1704.
7. AHN, Sala de Alcaldes de Casa y Corte, Lib. 1390e, fols. 664–667.
8. Almonds, pippin apples, barley, beef, tallow candles, charcoal, cherries, green chestnuts, spring chickens, chick-peas, cloves, cotton, eggs,

statistics on consumption, the index number has not been weighted; but the items chosen weight food heavily and probably come as near to giving each group of commodities its relative importance in the cost of living for the laboring class as any arbitrary system of quantity weights. Since the original data are too imperfect to warrant the use of a more sophisticated formula, an arithmetic index number has been computed. The wage indices include eleven grades of skilled and unskilled labor in the building trades.[9] Most of the data have been taken from the accounts of the construction of the Royal Palace at Madrid. Wage rates from the records of the Venerable Orden Tercera Hospital, the Tavera Hospital, and the municipality of Madrid have been used as controls.

These indices are presented in Chart I, using 1780 as a base. Since the weight, fineness, and vellon tariffs of silver coins did not

CHART I

INDEX NUMBERS OF COMMODITY PRICES AND MONEY WAGES
IN NEW CASTILE
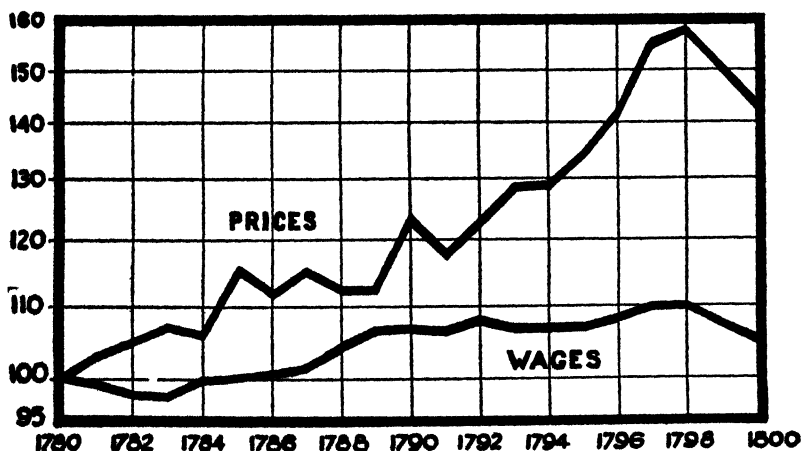
change in the period 1780–1800, the curves represent the cost of commodities and of labor not only in money of account but also in a fixed weight of fine silver, and portray gold prices and wages

wheat grits, hens, honey, ice, lambs, lard, lemons, lentils, milk, mutton, olive oil, writing paper, black pepper, salt pork, quail, raisins, rice, saffron, salt, soap, squabs, white sugar, twine, vinegar, wax, wheat, and wine.

9. Cabinet maker, cabinet maker's helper, carpenter, carpenter's helper, day laborer, mason, wood sawyer, marble sawyer, quarrier, stone cutter, and stone polisher.

in 1780–1785. Owing to the reduction in the fineness of the escudo, the standard gold coin, from twenty-one karats two and one-half grains to twenty-one karats, with no change in weight or tariff, on June 25, 1786,[1] the indices for 1786–1800 are three per cent higher than they would be if based on a fixed weight of fine gold.

While vales were depreciating twenty-two per cent in terms of specie in 1781–1782, commodity prices rose only five per cent; and prices continued slightly upward in 1783, while the specie quotation of vales was appreciating. The bad harvest of 1784 and the arrival of treasure held in America during the war with England forced prices upward almost twice as much in 1785 (at the beginning of which vales reached par) as had war and inflation in 1781–1782. After declining slightly in 1786–1789, the price index rose ten points in 1790–1792, while vales commanded a premium, the quantity remained stable, and peace prevailed. In 1793, the first year of war with France, when vales were at or above par in terms of specie, the price index advanced six points; but it climbed only one point the following year, when the war increased in fury and the paper currency depreciated. Owing to war, poor harvests, and large issues of vales, prices soared thirty points in 1795–1798; but in the face of war, a colossal issue of paper currency, and disastrous depreciation of vales in terms of specie, bountiful harvests brought prices down fifteen points in 1799–1800.

In 1781–1800 business was transacted *with* gold, silver, and paper money,[2] but *in terms of* vellon, the money of account. Goods bought with vales were *priced* in vellon;[3] but when depreciation was significant, the vales were accepted in payment only at the prevailing rate of discount in terms of specie.[4] The extremely large denominations of vales and the long experience of the Spanish public with a money of account divorced from the physical coinage prevented vales from becoming the accounting unit in the 1790's, when they were the principal medium of exchange in wholesale trade and financial transactions. Owing to the increase in the quantity of money in circulation, resulting from the issue of paper

1. AS, Secretaría de Hacienda, Leg. 820.
2. Vellon coins were used only as change and in petty transactions.
3. In more than five years' work on commodity prices in Spanish archives I have not found a single quotation of any article in terms of vales. Occasionally imported commodities were quoted at wholesale in silver, needed to send abroad to pay the exporter; but the sum was invariably recorded in vellon.
4. Since neither the market nor the legal tariffs of gold or silver coins changed in 1780–1800, they were taken at par.

money faster than specie was driven abroad, and to the rapid circulation of paper in 1781–1782 and 1794–1800, vales raised prices in money of account. The effect would have been several times as great, however, if vales had displaced vellon as the accounting unit. Realizing this, on March 5, 1797, the Treasurer General wrote the Finance Minister that successful prohibition of a discount on paper money "would lead to one of two extremes: either the public would completely suspend commercial operations or sellers, seeing that payments were to be made exclusively in vales, in order not to injure themselves, would calculate the value of their goods in vales with an enormous increase; and this would make the prices of necessities unbearable."[5]

The rates of depreciation of vales in terms of specie render possible a rough estimate of the extent to which prices would have risen, if paper had become the money of account. Instead of advancing approximately 47 per cent from 1780 to 1799–1800, when the average discount on vales in terms of specie was 50 per cent or more, other things equal, they would have gone up approximately 200 per cent. At least two opposing factors might not have remained equal. In the first place, runaway price inflation might have forced the government to reform the currency; but the exigencies of war, the limitation of current economic knowledge, and the aversion to taxes would have been formidable obstacles. In the second place, soaring prices would have reduced still further the willingness to hold currency and thus accelerated the rise. Of the two factors, the latter probably would have proved the stronger.

While prices were rising five per cent in 1781–1783, wages fell two per cent. By 1790 wages had recovered the loss and advanced seven per cent, but prices had gone up 23 per cent. The peak of both prices and wages came in 1798, when wages stood at 110 and prices at 159. For the quinquennium 1796–1800 wages averaged 108 and prices 150. In terms of the commodities included in the price index, wages lost 28 per cent of their purchasing power from 1780 to 1796–1800. The price indices measure satisfactorily the rise in food costs, on which workers doubtless spent a great deal more than half their money incomes, and roughly gauge the cost of living, exclusive of house rent. Since the remuneration of the building trades has proved representative of general wages in other periods in Spain and for widely separated times in other countries,

5. AMH, Negociado 130, Leg. 1.

presumably the index indicates the course of general wages with fair precision. Apparently real wages declined steadily at an average rate of almost one and one-half per cent a year during the two decades.

XII

Issued to finance wars without increasing taxes, vales eventually built up service charges and amortization requirements that forced the government to impose a host of new taxes, two of which proved so odious that the Church was unwilling to collect them. The paper currency did provide liquid resources when sorely needed; yet in every instance the government had drawn upon mercantile credit for nine months or longer without resorting to inflation. In this time new taxes certainly could have been devised or old ones increased, and the Spanish system of public finance was admirably adapted to produce revenue quickly. Vales were accepted at par for taxes and for the large bond issues floated in 1795–1799, and were paid out by the treasury at the market rate of depreciation. By raising prices they increased the pecuniary costs of the wars. Consequently the government derived little, if any, net financial advantage from the paper currency. If indulgence in the dangerous practice of proclaiming what "history teaches" is permissible, this episode tends to confirm the theoretically demonstrable evils of attempting to finance a major war without sharp increases in taxes.

The paper currency pressed upward on commodity prices, which had already been rising for three decades because of wars and a great increase in the output of Mexican silver. Since goods were not quoted in vales, prices rose much less than under vellon inflation in 1664–1679, for example; and fortunately paper inflation was never followed by deflation, as frequently occurred during the vellon disorder of the seventeenth century. The depreciation of the paper currency fell upon the well-to-do.[6] Owing to the extremely large denominations, the burden could not be shifted to the economically incapable. With solicitude for the poor, born of

6. Even the ultra wealthy did not escape. For example, Bartolomé Quintana, one of the richest men in southern Spain, who died at Carmona in 1800, left 1,016 vales of 600 pesos (Semanario de Salamanca, 24 de Mayo, 1800, p. 60). Joseph Alonso Ortíz recognized that the rich owned the vales, but mistakenly affirmed that the poor were paying the taxes for their amortization (op. cit., pp. 191–192).

eighteenth century humanitarianism, or (more likely) fear of the masses after the French Revolution, the taxes for amortization were placed squarely on the rich and the Church. But the surtax on salt, the levy of four per cent on the salaries of civil servants, and other taxes for the service charge fell on the underprivileged. They also suffered from the crippling of the eleemosynary institutions through the forced sale of their income-earning estates and investment in the sinking fund at a lower and less certain return. War and the resultant paper-money inflation were largely responsible for a twenty-eight per cent decline of real wages, already below the level necessary for health and efficiency. In 1795–1800 a high percentage of all legislation and administrative action was designed to curb the depreciation of vales. The avoidance of inflation through a rational plan of taxation would have saved this energy for the grave problems of war and peace that beset the Spanish Empire.

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INCOME-GENERATING EFFECTS
OF A BALANCED BUDGET

SUMMARY

Scope of the paper: effects of a non-progressive balanced increase in the budget, 78. — The mechanics, 79. — Qualifications: character of government output, 82; competition with private enterprise, 83; effect upon the propensity to consume, 83; further effects of taxation, 85. — Comparison of income-generating measures, 88.

For the postwar period a federal budget of some twenty billions or more is anticipated, well over twice the prewar rate of expenditures. While few economists today are dogmatic about balancing the budget at all cost, a great majority probably would prefer to see full employment brought about without the need for deficit spending. Under these circumstances it is of interest to investigate the effect which a budget balanced at a new and much higher level might have upon national income.

It has generally been assumed that the income-generating effect of a balanced budget depends upon its "progressiveness" i.e. upon the extent to which taxes and expenditures lead to a redistribution of monetary income from high-saving to low-saving groups and thus to a rise in the average propensity to consume. A balanced increase in a progressive budget would be stimulating, inasmuch as it would lead to a more pronounced redistribution of income. It can be shown, however, that even an increase in a "non-progressive" budget is likely to bring about a rise in national income.[1] A non-progressive budget in this sense is one under which the taxpayers as a group save, on average, no more than the recipients of government expenditures, so that the budget does not bring about a change in the public's average propensity to consume. This does not imply that the tax structure by itself is not progres-

1. This analysis appears to have been developed independently by a number of economists. Professor Hansen discusses it in his recently published State and Local Finance and the National Income, pp. 245–246. Professor Samuelson briefly referred to it in his study on "Full Employment After the War," (Postwar Economic Problems, edited by Seymour E. Harris, p. 44), but refrained from publishing his supporting analysis. Finally, I am informed that William Salant, in an unpublished manuscript, has reached the same conclusion. I am indebted for valuable comments on this paper to Professors Hansen and Samuelson, and to Mr. Beardsley Ruml.

sive, but merely that taxes on average take no more from each income group than government expenditures, in the form of salaries, interest, contractors' profits, etc., give back to these groups.

It is not the purpose of this paper, of course, to argue in favor of a completely non-progressive budget. There are limits, however, to the degree to which the budget can be made progressive.[2] Increases in a budget beyond previously existing levels may sometimes, therefore, have to be made in a non-progressive form. In this paper we shall deal with the effects of a non-progressive balanced increase in the budget, without regard to the progressiveness of the basic budget.

The Mechanics

Suppose that national income is at a level of 130 billion dollars, and that this leaves without employment resources capable of producing ten billion dollars worth of goods and services. Now the personal income tax is raised to yield an extra ten billion dollars, and this money is employed, say, to build more roads, provide more free education, etc., previously idle resources thus finding employment. Incremental taxes and expenditures are so adjusted that the consumption and saving habits of taxpayers as a group are the same as those of the newly employed who are the recipients of incremental government expenditures. It is true that the additional tax reduces by ten billion dollars the purchasing power of those who are employed to begin with; this purchasing power, however, is not destroyed, but merely transferred to the hands of the newly employed. Since in their joint effect the additional taxes and expenditures are, by assumption, non-progressive, the consumption demand exercised by the newly employed will be the same as that which would have been exercised by the initially employed, had they not had to pay the tax. Aggregate private demand and private output therefore remain unchanged, but meanwhile there is an increase in government output equal to the ten billion dollars produced by the previously unemployed, which

2. On the revenue side, progressiveness is limited, among other things, by the need to allow an incentive to the upper income groups. On the expenditure side, the Government's ability to direct its expenditures toward the lower income groups is limited by the fact that a substantial part of its output consists of interest payments which go, in good part, into high-saving channels.

is paid for out of taxes and therefore is not dependent upon the level of aggregate demand.   Thus national income has been raised to a total of 140 billion dollars.

The reason why national income can increase in this instance, without an increase in investment and without a redistribution of income from the higher to the lower income groups, is that the additional income financed by the Government does not give rise to new net saving. It is true that the previously unemployed will save part of their new income, but an equal volume of savings of the initially employed is absorbed by the additional tax. Since the two groups are assumed to be similar, the savings of one are offset by the reduction in the savings of the other.[3] By absorbing part of originally existing income and respending it in its entirety, the Government prevents some fraction of this amount from being saved, as it otherwise would be. If, for instance, the initially employed would have spent seven billion dollars of the ten billion they now pay to the Government, and saved three billion, the income stream would have been reduced by that three billion, whereas the Government passes it on in undiminished force.[4]

If the collection and disbursement of these new revenues could be carried out instantaneously, the redistribution of purchasing power would, in the most favorable case, cause not even a temporary let-down in demand for the output which the initially employed can no longer absorb. Since such efficiency cannot be achieved, however, there is certain to be a period during which the collection of taxes will already be reducing demand, while the revenues are not yet available for expenditure. A decline in demand and output would be the result. Even after the incremental tax collections began to be offset by new expenditures, however, there might not be a full recovery from the initial contraction, unless the money supply had previously been redundant. New stages have been inserted in the money stream, and the amount of money work to be done has increased. The income velocity of money

3. The newly employed will, of course, also become taxpayers, and will return to the Government some of their income, thereby reducing net government expenditures. These revenues are allowed for in balancing the budget. To simplify the analysis, however, we may think of the newly employed's income as net of taxes, and of government expenditures as net of the amounts received in tax payments by the newly employed. The greater part of the incremental tax burden will, of course, be borne by the initially employed.

4. For alternative analytical versions of expressing this effect, cf. Alvin H. Hansen, loc. cit.

will therefore decline, unless the public or business firms are willing to allow their cash balances to be reduced while cash is being accumulated wherever activity and employment increases. A declining income velocity means, of course, a reduction in per capita income.

It will, therefore, be desirable for the Treasury to begin to spend, out of borrowed funds, as soon as the new taxes go into effect and before the corresponding revenues become available. This will not only eliminate the temporary decline in demand, but will also remedy the tightness in the money supply which may result from the increase in money work. The amount to be borrowed depends upon the lag with which tax proceeds are respent by the newly employed in the purchase of goods which the initially employed no longer buy, and upon the amount of new balances required to perform the additional money work. The added volume of money work will, in turn, be a function of the type of services for which the Government spends its incremental receipts. An increase in the number of Washington employees will probably require a much smaller addition to the money supply than a public works program costing an equal amount but having far-flung ramifications throughout the industrial structure. The creation of an appropriate volume of new money will offset the decline in income velocity, and monetary income *after* taxes will remain unchanged for the economy as a whole. This is desirable, inasmuch as the aggregate supply of non-government goods and services is also expected to remain unaltered. The monetary income, after taxes, of the initially employed will, of course, be reduced by the amount of the tax.

The borrowing which the Treasury will have to do in this instance is of a non-recurrent nature and has no relation to permanent deficit spending. It is merely a reflection of the increase in money work and of the rise in total national income.[5] If and when the additional taxes and expenditures are eliminated and the budget once more is reduced to its original level, the last revenues will still come trickling in after expenditures have stopped; the Treasury will then recover its initial outlay.

5. The need for a rising supply of active balances in the presence of a larger volume of government services was pointed out by Professor Hansen in *Fiscal Policy and Business Cycles*, pp. 169–170.

QUALIFICATIONS

The preceding analysis must be qualified in a good many ways, before its realistic significance can be assessed. It will be noted, however, that it not only shows what could be done, but that it also describes what, in a sense, has already happened, i.e. the rise in the budget to the twenty billion dollar level expected for the postwar period. The qualifications about to be listed, therefore, apply not only to the theoretical argument, but are in part very real questions to be asked about a twenty billion dollar budget.

Character of government output. The increase in national income resulting from a larger budget comes about through an increase in government output. This does not mean that the additional goods and services must be produced by the Government, but merely that they must be made available through the Government. They may be produced largely by private contractors. The question arises, therefore, whether there are enough goods and services that the Government can produce or purchase and distribute freely, which are really full-bodied additions to national income. It is plain that by merely making two employees in Washington do the work of one, and thus ostensibly increasing the supply of "administrative services," no substantial contribution to national income is made. An increase in the supply of educational and medical services, of bridges and roads, and of irrigation and soil preservation activities, would be different. Of the actual postwar increase in the budget a large part will go for defense expenditures. This must be regarded as an insurance premium which will be well worth paying, even in a purely economic sense, if it saves us a major war every twenty-five years, but it is not a positive contribution. Another large part will merely constitute "transfer payments," such as interest and pensions. These, of course, do not increase national income, since the recipients do not render any productive service in return. Expenditures on veterans' education, housing, medical services, on the other hand, will be real contributions to income.

Beyond these there are large areas of public investment which have scarcely been tapped, such as slum clearance, rural rehabilitation, and river valley development. It appears, therefore, that we still have not come close to exhausting the range of government

services, which would be valuable enough to comply with the principle of avoiding spending for the mere sake of spending.

Competition with private enterprise. A rise in the budget will make a net contribution to national income only provided government services do not merely take the place of goods and services previously supplied by private enterprise. The Government must, therefore, avoid active competition with private enterprise in the market for factors of production, and must further avoid supplying services which are close substitutes for private output.

If there is large-scale unemployment, the danger that the Government might hire productive factors away from private enterprise is small. Even then, however, the Government may encounter difficulties in finding unemployed factors suitable for the particular types of services which it may want to produce, such as medical and educational facilities. With growing employment, these difficulties will become more pronounced. Even before full employment is reached, government operations may begin to interfere seriously with private enterprise by pushing up wages. When there is full employment, the Government can obtain labor and other factors only by bidding them away from their previous employers, and an increase in income becomes impossible.

With respect to output, the competition between government and business is of a somewhat different order, since government services are provided free. These services, however, might easily become substitutes for similar services previously purchased in the market. Free medical care, under certain circumstances, might not lead to a major expansion in volume of such services, but might merely take the place of services which are now paid for privately. To avoid this danger, the Government will have to avoid entering fields where a great increase in consumption cannot be expected, even if the supply is free. It should concentrate, in so far as possible, upon services where government output is complementary with private output. Instances are road building, which stimulates automobile and gasoline output, river valley development, which stimulates new investment in various forms, and the subsidization of private construction.

Influence of a higher budget upon the propensity to consume. Another major qualification relates to the assumption that people will curtail their saving if higher taxes curtail their monetary income. It probably is reasonable to assume that people react to a

rise in the income tax, if they regard it as permanent, in roughly the same way as to a cut in wages, salaries, or other income.[6] In the short run, however, this reaction is likely to vary considerably for different individuals. It is only in the long run that one may expect consumption and saving out of a reduced income to conform, on average, to the normal pattern of the new net income class into which the taxpayer is shifted by the tax. In the short run, a taxpayer with a fairly well established standard of living is likely to let the brunt of the income reduction fall upon his saving. He has financial commitments and social standards which he cannot alter very quickly. On the other hand, there are likely to be taxpayers whose most rigid commitments are on the side of saving, such as life insurance premiums and mortgage amortization. Here the reduction in income will primarily cut into consumption.

On the whole, one may expect those cases to predominate where consumption is less flexible than saving. This seems to be almost certainly true when income changes are due to cyclical swings.[7] The evident hesitancy with which people adjust their consumption to cyclical income changes is probably due, in part, to their hope or fear that the change will be of short duration. To a certain extent, however, the lag may reasonably be regarded as a more general phenomenon, indicating that consumption habits are, on the whole, more stable in absolute terms than saving habits. This suggests than an increase in taxation will be more effective in curtailing savings in the short run than in the long run. It also suggests that the stimulating effect of an increase in the degree of progressiveness of the budget will tend to wear off as time goes on. The effect of a rise in a non-progressive budget, however, would not be affected by the lag in the adjustment of savings to income changes, unless the adjustment to a decline in income should differ in speed from the adjustment to a rise. If the lag is the same, excessive initial reduction in the saving of the initially employed

6. There is some doubt as to whether or not the reaction would be the same if taxes were indirect and appeared in the form of rising prices. If there is any difference, however, it is likely to be in the direction of a greater rather than a lesser curtailment of saving, as compared with the reaction to a cut in income. Cf. Jacob Marshak, "Money Illusion and Demand Analysis," Review of Economic Statistics, February, 1943, pp. 40–48. Such difference as may exist probably would be a short-run phenomenon and would disappear in the long run.

7. Cf. Ezekiel, "Statistical Investigation of Savings, Consumption, and Investment," American Economic Review, March, 1942, p. 33.

would be offset, in its stimulating effect, by equally excessive saving of the newly employed. After both sides had completed their adjustment, the saving of the newly employed would continue to balance the reduction in the saving of the initially employed, both at a somewhat lower level.

We must take into account, however, the effect which an increase in the supply of free government services may have upon the saving of an individual whose monetary income is being curtailed by higher taxes. It is not at all unlikely that, as his nonmonetary income rises, he may cease to base his saving purely upon his monetary income and may begin to save in accordance with his aggregate, i.e. monetary and non-monetary, income. This is particularly likely to happen if the Government begins to supply services which previously were sold and bought in the market; for example, if the same type and amount of medical assistance as previously consumed were now supplied free of charge. The average taxpayer might then simply pay taxes instead of doctor's bills and might not reduce his savings at all.[8] Some types of government services, on the other hand, might not only leave the taxpayer's propensity to consume his monetary income unchanged, but might actually cause that propensity to rise. A comprehensive system of social security expenditures, for instance, might have that effect. Nevertheless, with a growing volume of government services, and with a growing consciousness on the part of the taxpayer regarding the composite character of his income, the chances are that government services will increasingly be taken into account in deciding how much to save.

Further effects of taxation. A reduction in saving will be stimulating only if investment remains unaffected. If investment is reduced pari passu with saving, there will be an increase in consumption, but not in income. As a matter of fact, income taxation may be expected to interfere with investment in several ways. In so far as taxes discourage the purchase of securities, they tend to raise the interest rate and, by producing thinner security markets, may prevent some flotations altogether. In so far as they cut into the accumulation of liquid funds by small business men and would-be home owners, a certain amount of physical invest-

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8. This is merely another aspect of the point made above that no increase in national income will take place if the Government competes with and displaces private output.

ment may be directly curtailed. High tax rates, finally, may destroy the incentive to invest, even where funds are not lacking.[9] In some instances the potential investment thus cut short may exceed the reduction in savings; for instance, if part of the investment was to have been financed through bank credit or with a mortgage. These considerations, however, are more relevant to a progressive than to a non-progressive increase in the budget. In the latter case we expect neither a decline in the volume of saving nor, what is very important, a change in its distribution by income groups. Adverse effects upon investment, therefore, are likely to be less.

Another question is the effect of increased taxation upon private business and upon the political temper of the taxpayer. It has already been pointed out that no change in already existing demand for the output of business need be anticipated, if the expenditure habits of the new income recipients are similar to those of the taxpayers. An increase in demand for the output of business would result, in so far as the Government does not provide the additional services by hiring productive factors for its own account, but operates through private contractors or purchases privately produced materials. The increase in employment and income might also stimulate private investment, provided, as already pointed out, that government services do not compete with private business. It is clear, however, that the taxpayer will resist a continuous rise in taxation, even if his taxes are offset, on the average, by an increase in free government services. This is particularly true because, no matter what the distribution of the tax burden, it is not likely that the incidence of the benefits can be made directly proportional to it. Thus some people will pay more in taxes than they get in services, while others will be in the reverse position. This inevitable inequity of a rising tax load limits the size of the budget that is politically and economically feasible.

In this connection we should note that there is a difference between a redistribution of purchasing power and a redistribution of income. A non-progressive increase in the budget need not, and probably does not, occasion a redistribution of purchasing power among different income groups, since it is assumed that income and saving of the initially employed are the same, on average, as those

9. Since we are thinking only of the effects of a personal income tax, we need not be concerned here with the effect of corporate taxes upon the investment policies of widely held corporations.

of the new recipients of government expenditures.[1] A redistribution of purchasing power does take place, however, within *similar* income groups, since taxes transfer purchasing power from those already employed to the newly employed.

Whether or not these taxes also bring about a redistribution of *income*, including free government services, depends on the character and distribution of the new services. One could imagine a distribution of services which would return to each taxpayer in government services as much as had been taken from him in taxes. In that case the taxpayer's total income would be unchanged, while the increase in the income of the newly employed would be equal to the rise in aggregate national income. Practically, however, such a distribution is virtually impossible of achievement.[2]

The incidence of government services is largely indeterminate. A familiar version of this matter is the problem of how to evaluate services to business, which arises in connection with national income computations. The imputation of government services to each individual taxpayer poses similar questions in a magnified form. To some extent the taxpayer himself decides how far he wants to avail himself of what the Government offers. He may drive on a public highway and sit on a bench in a public park, or he may stay at home; he may go to a government hospital, or he may remain in good health. The Government can do little more than to aim its services at certain groups, without much hope of knowing in advance how much they will be worth to any particular taxpayer. From an analytical angle, the important point is to distinguish between the monetary effect of taxes and expenditures, on one side, and the welfare effect of taxes and services, on the other.

Finally, attention may once more be drawn to the fact that the

1. A redistribution among different income groups would take place, however, if the incremental taxes fell chiefly upon the rich and the poor, while expenditures went mainly to the middle brackets, or vice versa.

2. A consideration of the effects of income redistribution appears to cast some doubt on a familiar proposition of welfare economics. The welfare of a community is said to have increased, if, following a change in output and income through which some members gain while others lose, those who gain can fully compensate the losers and still be better off than before. The advantage of this criterion is that it avoids interpersonal comparisons of utility. If the gainers and losers, however, are concentrated in the low and high savings groups, respectively, the attempt to make appropriate compensation might so increase the saving of the community as to offset the original rise in income. The welfare criterion may thus be indecisive, because, all practical obstacles apart, such compensation may even analytically be impossible.

use of a larger budget, as here discussed, does not tend in the direction of what Professor Hansen has called a "dual production economy,"[3] i.e. an economy where part of the productive equipment is operated by the Government, the output being *sold* in the same manner as private output. The essence of the approach outlined in this paper is that government output is made available free of charge. A large budget does, however, tend in the direction of a dual consumption economy. It therefore raises all the troublesome problems of optimum allocation of resources which arise as soon as a part of national income ceases to be subject to the price mechanism. As long, however, as we are concerned, not with the alternative use of given resources, but with the question of unemployment, i.e. with whether or not certain resources are to be used at all, this problem need not worry us particularly.

Whether the expenditure of the Government involves the production of consumption goods and services or of investment goods is largely irrelevant, as far as the increase in income is concerned. The additional tax revenues will be equally effective, whether spent upon a new dam or upon free university training. Inasmuch as it is desirable to induce the individual taxpayer to curtail his saving in proportion to the rise in taxes, it may be advantageous, in the short run, to spend for investment goods, since their services accrue to the taxpayer only over a period of time. Concentration upon consumption services might make it too obvious to the average taxpayer that his real income (including government services) has not been reduced, and therefore tempt him not to reduce his saving sufficiently. For these reasons it is not particularly fruitful to classify a large budget as a stimulant to consumption or as a stimulant to investment; it may be used to achieve either one of these objectives, or both simultaneously. Basically it is a means of limiting the amount of private saving while income rises.

COMPARISON OF INCOME-GENERATING MEASURES

It is interesting to compare the effectiveness of a balanced non-progressive budget with that of other fiscal devices for the stimulation of income. The most important alternatives to be considered are a budget deficit and an increase in a balanced, *progressive* budget.

3. Alvin H. Hansen, *Fiscal Policy and Business Cycles*, pp. 400–410.

It is obvious that a budget deficit, however engendered, will have a larger multiplier effect than an equally large non-progressive increase in the budget financed by taxation, since for the latter the multiplier is equal to one, while for the former it almost certainly will be above one. In addition, the rise in income associated with a deficit may have a substantial acceleration effect. How much of this effect will be in evidence following a rise in a balanced budget depends upon the extent to which the Government purchases goods and services privately produced, instead of producing them itself. Since the rise in income is less, the acceleration effect will also be less, even if the Government spends the entire incremental revenues upon privately produced output. Moreover, one probably cannot assume that an increase in government orders will induce the same amount of private investment that might be called forth by higher private demand. This will be true, at any rate as long as government demand is regarded as less permanent than private demand.

It should be noted that the effect of a deficit will not be the same regardless of whether it is brought about by an increase in exhaustive expenditures or by a reduction in taxes. In the latter case, some of the gain in income after taxes will be saved, and will not add to effective demand, thus weakening the stimulus. A deficit brought about by an increase in non-exhaustive payments, such as relief or pensions, will likewise lose in effectiveness, if part of the money is saved by the recipients.

The comparison between the effects of a progressive and a non-progressive budget calls for more detailed analysis. An increase in a progressive budget reduces saving at any given level of national income. This produces a discrepancy between saving and investment (the latter assumed to remain constant); income therefore rises in accordance with the multiplier.[4] An increase in a progressive budget thus has a double effect: (1) an increment in government output equal to the incremental expenditures (identical with that which results from a non-progressive budget), and (2) the multiplier effect called forth by the reduction in saving relative to investment.[5] It is plain, therefore, that a rise in a progressive

4. It is quite possible that the change in the average propensity to save brought about by the tax may also affect the marginal propensity, in which case the value of the multiplier would change.

5. For a different approach to this point, see Lloyd A. Metzler, "Effects of Income Redistribution," The Review of Economic Statistics, February, 1943, p. 56.

budget will be considerably more stimulating than a rise in a non-progressive budget, *as far as their respective multiplier effects are concerned.*

With respect to induced investment, one cannot be so sure. It is true that, in addition to higher government output, which may or may not induce some private investment, a rise in a progressive budget is followed by an increase in private demand, which is almost certain to do so. But this advantage of the progressive budget may be balanced by the reduction in other investment which is likely to result from the more intensive taxation of savings. One cannot estimate the quantitative importance of these effects, but they are likely to reduce the relative advantages of a progressive budget.

The quantitative effect upon savings of a given schedule of income tax rates and expenditures can be estimated, within fairly broad limits.[6] The incidence of a tax, without reference to the effect of equivalent expenditures, was investigated by Abram Bergson on the basis of the income and saving distribution of American families in 1935–36.[7] He found that an additional income tax equal to five per cent of total income would reduce saving by 30.4 per cent of the tax, if the levy were proportional to income; by 60.7 per cent, if the levy were progressive in the same degree as the "personal taxes paid" recorded in the budget data; and by 65.2 per cent, if the levy were designed to reduce saving to a minimum. Bergson did not attempt to estimate the net change in saving after the expenditure of the incremental tax revenues by the Government, which could only be done on the basis of particularizing assumptions as to the type of expenditures. Given realistic assumptions, the net curtailment of savings undoubtedly would be considerably less than the above figures indicate.

The small difference between a tax duplicating the degree of progressiveness prevailing in 1936 and one aimed to reduce saving to a minimum (60.7 against 65.2 per cent) indicates, as Bergson points out, that.the 1936 personal tax structure was already highly progressive. It suggests that in future we ought perhaps to think

6. Allowance being made for the probability that the adjustment of taxpayers and income receivers to their new income levels might be slow.

7. Abram Bergson, "The Incidence of an Income Tax on Saving," this JOURNAL, February, 1942, pp. 337–341. The basic data employed were those of the National Resource Committee (Consumer Expenditures in the United States, 1939).

less about making the income tax more progressive than about making government expenditures less regressive, by directing them away from high saving channels and toward the low saving groups. This aspect will be of particular importance in our postwar budget, in view of the substantial proportion of expenditures devoted to debt service, and the very large part thereof which goes into high saving channels.

Finally a word regarding the limitations of changes in a balanced budget as an anti-cyclical weapon. It is plain that as a means of getting back to full employment, once a depression has set in, a balanced rise in the budget will be less effective than a budget deficit. Dollar for dollar it carries less stimulating potential, and the rise in taxation during a depression would undoubtedly have adverse repercussions. Changes in the level of expenditures, moreover, unless restricted entirely to the public works account, might require deep-seated changes in consumption patterns — a switch from private to government services — which could not be made and unmade every few years.

A large budget, however, is in itself an element of stability, since it assures a given volume of expenditures. Thus its mere presence will tend to smooth out cyclical fluctuations, even without counter-cyclical changes in expenditures. Moreover, it permits substantial deficits to be generated by means of tax reduction, in place of, or in addition to, a rise in expenditures. Even though this type of deficit is somewhat less potent, since part of the remitted taxes will go into savings, it may at times have psychological and other advantages.

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STRIKES AND LOCK-OUTS IN GREAT BRITAIN[1]

SUMMARY

Introduction: scope of the paper, 92. — Number of disputes, 94. — Attitude of trade unions, 94. — Compulsory arbitration, 96. — Magnitude of disputes, 98. — Duration of disputes, 98. — Industries affected, 99. — Causes of disputes, 102. — Results of disputes, 104. — Conclusion, 106.

INTRODUCTION

British experience with regard to labor disputes during the war is closely related to the pre-war temper and spirit of British labor policy. It is of interest that statistics on labor disputes, as officially recorded in The Ministry of Labour Gazette, do not distinguish between strikes and lock-outs, while in the United States The Monthly Labor Review gives statistics on strikes alone. Furthermore, coöperation between employers and organized labor in Britain had made substantial progress prior to the war. The absence of jurisdictional disputes, the prevalence of industry-wide collective bargaining and wage agreements, and the growing rôle of conciliation and arbitration machinery in settling labor disputes made for the successful operation of industrial democracy.

After Dunkirk, government, labor, and industry readily realized that losses to production could only be minimized by limiting the conditions under which a strike or lock-out might take place; but the institution of such conditions was carried out in accord with democratic and judicially fair procedures. Above all, the prevention of labor disputes was recognized as a temporary and unsatisfactory solution of industrial unrest. Only the removal of the causes of strikes and the adjustment of grievances would make possible uninterrupted production.

This paper will examine British experience during the war (1939–42)[2] and compare it with a selected portion of the peace

1. The author is indebted to Professor Z. C. Dickinson of the University of Michigan for his helpful suggestions in the revision of this paper.
2. All of 1939 is included in the war period, because it was a year of extensive military preparation, and because the statistics of labor disputes for the months immediately following the outbreak of war, September, 1939–December, 1939, show no radical changes over the statistics for the previous eight months of 1939. Of the total number of disputes occurring in 1939

period (1927–38).[3] The nature and causes of the differences between the war period and the peace period with respect to the incidence and character of labor disputes will be analyzed and an attempt will be made to appraise the significance of those changes in terms of the level of national income of the war period.[4]

The incidence and character of labor disputes is related to the national income. Inasmuch as an increase in the national income is presumably accompanied by an increase in the level of employment, more disputes are likely to occur, more workpeople are likely to be involved, and more working days are likely to be lost in disputes. Not only is there greater statistical probability in terms of the new level of employment, but the economic scene is ripe for industrial unrest. Prices and profits are rising rapidly; unions are in a stronger bargaining and financial position; membership increases and labor becomes increasingly scarce. Thus, more workers in a greater number of disputes strike for wage increases; and the number of working days lost grows as a result of the previous two factors and of the lengthening of the disputes themselves. More disputes, more workers involved, and more work days lost in disputes must therefore be expected at a high level of national income. We cannot conclude that one period shows a better record than the other because less disputes, less workers involved, and less work days lost in disputes were reported.

(940), 271 took place from September to January. Thus, approximately a third of all disputes occurred in the last third of the year, indicating no substantial change over the first eight months of 1939. (The number of disputes for 1939 was taken from The Ministry of Labour Gazette, January, 1941, p. 5; the number of disputes from September to January, 1940, was computed from the monthly statistics of The Ministry of Labour Gazette.)

3. The choice of 1927–38 as the peace period is based on the fact that it is a typical peace period which exhibits the ups-and-downs of cyclical fluctuations. From 1927 to 1929 the national income was rising. From 1929 to 1933 the national income dropped from the peak to the depth of the period. From 1932 to 1939 the national income regained old and won new ground, equalling the peak of 1929 in 1935 and passing beyond it by a rather significant margin in subsequent years. (A. L. Bowley, National Income in America and the United Kingdom, Economica, August, 1942, p. 228.) In addition, the period was chosen because (1) it was relatively short and immediately preceded the war, thus minimizing the problem of secular changes, and (2) it omitted the year of the General Strike, 1926.

4. The measure used throughout is the money national income. The unavailability of real income statistics in the war period makes the money national income, rough approximation though it is, the best measure of the level of economic activity and employment.

A larger number of disputes at a higher level of national income or a greater number of workers involved at a higher level of employment may mean a proportionately equal or even a smaller production loss than that resulting from a smaller number of disputes or a smaller number of workers involved at a lower level of national income or employment.

NUMBER, MAGNITUDE, AND DURATION OF DISPUTES

The average number of disputes which led to a stoppage of work is to be measured, since disputes not resulting in a stoppage of work are not included in The Ministry of Labour Gazette's statistics on strikes and lock-outs. The average annual number of disputes in the war period was 1,104, as compared with an average of 540 disputes in the peace period. In other words, the average annual number of disputes in the war period was approximately twice the average annual number of disputes occurring in the peace period.

The war record seems a poor one against the peace period; but when account is taken of cyclical variations in economic activity, the number of disputes in the war period appears relatively low. As indicated by Table I, the number of disputes, when set against the money national income in the peace period, increased in the earlier depression years, decreased at a slackening pace until stability was attained in the range of the average money national income, and increased at a quickening pace as more prosperous years were ushered in.[5]

One of the factors affecting the number of labor disputes is the strength and current attitude of the trade unions. In the now familiar pattern, trade union membership in the peace period declined in the depression years, increased as the normal level of the period was regained, and rose rapidly as relatively high levels of economic activity were attained. (See Table I). With the exception of the depression years in which the number of disputes rose (e.g. due to wage reductions), therefore, total trade union

5. By replotting the number of disputes against the money national income on logarithmic paper, the relationship is seen to be linear. Then, by extending the line to cover higher levels of money national income, the expected number of disputes in the war period is determined. The average annual number of disputes at the average level of money national income (less pay to the Armed Forces) in the war period (excluding 1939, for which the money national income data are unavailable) is observed to be lower than the expected number of disputes at the average war income.

TABLE I

MONEY NATIONAL INCOME, TRADE DISPUTES, AND TRADE UNION MEMBERSHIP IN GREAT BRITAIN AND NORTHERN IRELAND, 1927–42[1]

Year (1)	Money National Income[2] (2) (£000)	Pay to Armed Forces[3] (3) (£000)	Column 2 minus Column (4) (£000)	Number of Trade Disputes in Year[4]	Number of Workers Involved in Disputes Beginning in Year — Directly (000)	Indirectly (000)	Approximate Aggregate Duration in Working Days of Disputes in Progress (000)	Trade Union Membership[5] (000)
1932	3,325	…	3,325	389	337	42	6,488	4,444
1931	3,450	…	3,450	420	424	66	6,983	4,624
1933	3,550	…	3,550	357	114	22	1,072	4,392
1934	3,700	…	3,700	471	109	25	959	4,590
1930	3,800	…	3,800	422	286	21	4,399	4,842
1927	3,900	…	3,900	308	90	18	1,174	4,919
1928	3,925	…	3,925	302	80	44	1,388	4,806
1929	3,925	…	3,925	431	493	40	8,287	4,858
1935	3,925	…	3,925	553	230	41	1,955	4,867
1936	4,150	…	4,150	818	241	75	1,829	5,295
1937	4,350	…	4,350	1,129	388	209	3,413	5,843
1938	4,350	…	4,350	875	211	63	1,334	6,054
1940	5,650	260	5,390	922	227	73	940	6,230
1941	6,620	400	6,220	1,251	298	64	1,079	7,090
1942	7,385	500[6]	6,855	1,303	356	107	1,553	7,781

[1] Lack of data on money national income for 1939 excluded that year from the table.
[2] For 1927-39, A. L. Bowley, National Income in America and the United Kingdom, Economica, August, 1942, p. 228. For 1940-42, British Information Services: Britain's War Economy (Revised October, 1943), p. 1.
[3] For 1940-41, N. Kaldor, The 1941 White Paper on National Income and Expenditure, Economic Journal, Vol. LII, p. 218.
[4] Ministry of Labour Gazette, January, 1939, p 6; May, 1943, p. 63.
[5] Ibid. November, 1943. p. 152.
[6] Estimated on the assumption that the size of the Armed Forces increased but little during 1942, and that the increase of 1942 over 1941 was consequently smaller than the increase of 1941 over 1940.

membership is positively correlated with the number of disputes in the peace period. For the increase in union strength makes possible the more effective presentation of workers' demands, which, in the main, arise out of the economic conditions of a rising level of economic activity.

On the whole, the rôle of the trade unions in the war effort may be considered one of the most significant reasons for the relatively low number of disputes in the war period. Although average trade union membership for the war period is approximately thirty-four per cent higher than that for the peace period (see Table I), the potential power of organized labor has not been exploited to the utmost in war-time Britain.[6]

Labor's attitude toward the war is most effectively demonstrated in the absence of disputes in May, 1940, when Churchill came into power. The major disputes in May, 1940, all occurred before May 11, the date of the formation of the Churchill government. Not one important dispute arose during the remainder of the month, and each of the important strikes or lock-outs beginning in May was settled by May 14.[7] The tense military situation in the Lowlands and the downfall of the Chamberlain government, which removed the blot of the Munich appeasement and ended "business as usual," brought support from the trade unions. The placing of labor men in responsible, active positions in the Coalition Government and the speedy enactment of progressive social legislation afforded concrete reasons for the sharp decline in disputes.

The evacuation of Dunkirk in June, 1940, the fear of invasion, and the blitz in the months that followed made for the continuation of labor's sense of responsibility. However, as the fear of invasion passed and the prospects of the Allied cause brightened, labor grew more critical of the conduct of the war effort, and trade disputes again began an upward climb. Subsequently, the outbreak of trade disputes in the coal mining industry — intermittent but on a large scale in 1942 and 1943 — is more pronounced evidence of a slackening of the war effort as the prospects of victory took on added certainty.

A factor which cannot be ignored in connection with the

6. The extrapolation of the peace-time correlation between trade union membership and the number of disputes shows that the expected average annual number of disputes is considerably larger than the actual average annual number of disputes for the average trade union membership of the war period.

7. Ministry of Labour Gazette, June, 1940, p. 171.

reduction in the number of disputes after the formation of the Churchill government is the introduction of compulsory arbitration machinery. Its purpose was the solution of problems of industrial unrest without production losses due to strikes and lock-outs. Acting under Regulation 58 AA, which empowered the Minister of Labour to issue orders designed to prevent the interruption of work by trade disputes, and consulting with the National Joint Advisory Council, Ernest Bevin issued the Conditions of Employment and National Arbitration Order, 1940.[8] The main provisions of this Order, which came into operation on July 25, 1940, are summarized below:

1. The causes of disputes were to be minimized by the provision that:

(a) There be a voluntary extension of collective bargaining machinery;

(b) Employers were to observe the terms and conditions of employment which were recognized in collective bargaining agreements or arbitration awards for the industry in that district;

(c) All departures from trade union rules and practices were to be recorded and filed with the Ministry of Labour, so that their restoration might be easily accomplished after the war.

2. The right to strike or lock-out was limited by provision that:

(a) All grievances or claims were to be reported to the Minister of Labour. During the following three weeks the Minister was to refer the dispute to a settlement body. If collective bargaining machinery suitable for settling the dispute exists in the industry, the Minister must refer the dispute to that body. If that body fails to reach a settlement, or a settlement appears to be unduly delayed, the Minister can refer the dispute to the National Arbitration Tribunal. In cases where adequate joint machinery is lacking in the industry and attempts at conciliation have failed, the Tribunal has jurisdiction too. In addition, the Minister may at any time refer to the Tribunal for advice on any matter.

(b) Where strikers violate the arbitration process, by either failing to submit the dispute to the Minister of Labour, observe the waiting period of three weeks, or comply with the binding decision of the Tribunal, which has workers', employers', and

8. International Labour Review, Vol. XLII, Nos. 4–5, October–November, 1940, pp. 252–255.

public representatives on it, the Minister of Labour was reserved the power to stop a strike or lock-out by imprisonment of the workers or employers. Thus, a strike or lock-out may only take place legally if the waiting period has elapsed and the dispute has not been reviewed by the designated settlement body.

Insofar as the operation of the Conditions of Employment and National Arbitration Order has kept many disputes from materializing into strikes or lock-outs, the number of disputes in the war period is smaller than it might otherwise have been.[9]

The average annual number of workers involved in all disputes in the war period was 365,000, as compared with 306,000 in the peace period. The average annual number of workers involved in all disputes was 282,000 directly and 84,000 indirectly in the war period. For the peace period the corresponding figures were 250,000 and 56,000.

The average number of gainfully occupied persons (exclusive of the Armed Forces) in Great Britain and Northern Ireland may be estimated at 20,600,000 for the peace period and 23,450,000 for the war period. If the ratio of the annual number of workers involved in all disputes is taken to the average number of gainfully occupied persons for each period, they are found to be approximately equal. However, on the whole, disputes in the war period involved fewer workers than in the peace period. The average number of workers involved per dispute in the war period was 331, as compared with 567 in the peace period. In addition, the disputes which involved more than 5,000 workpeople each were only a handful in the war period.[1]

The duration of disputes is measured in terms of aggregate working days lost. Aggregate working days lost is the product of the number of workpeople involved in the work stoppage and the number of working days during the stoppage. The average annual number of aggregate working days lost in the war period was

9. Trade disputes adjudicated by the National Arbitration Tribunal are excluded from The Ministry of Labour Gazette's statistics on strikes and lock-outs, because they do not involve stoppages of work. On the average, the Tribunal has handled about two hundred and twenty disputes per year since its inception. It may be estimated that if the Tribunal did not exist the average annual number of trade disputes resulting in production losses would be increased by approximately fifteen per cent in the war period.

1. From 1940 to 1943 there were only six disputes involving more than 5,000 workpeople each in Great Britain and Northern Ireland. (Ministry of Labour Gazette, January issues, 1941–43, Principal Disputes.)

1,232,000 as compared with 3,273,000 in the peace period. Taking account of gainfully occupied, the annual loss per gainfully employed worker was computed at five-hundredths of a day in the war period and sixteen-hundredths of a day in the peace period. However, the change in the annual loss per gainfully employed worker was caused least by the change in employment itself. The average number of gainfully occupied increased by approximately fourteen per cent and the number of working days lost decreased by approximately sixty-one per cent over the peace period.

Since the number of strikes and lock-outs doubled in comparison with the peace period, and the number of working days lost in the war period was two-fifths of the peace total, the duration of disputes was about a fifth of the peace period. As a matter of fact, the average number of aggregate working days lost per dispute in the war period was 1,117, as compared with 6,066 in the peace period. However, in terms of aggregate working days lost per striker, the spread between the war and peace periods is not so large. The loss per striker was 3.4 days in the war period as compared with 10.7 days in the peace period. In other words, the duration of disputes per striker in the war period was about a third of that in the peace period.

THE INDUSTRIES AFFECTED

The over-all picture presented above is further clarified by analysis of the incidence and character of labor disputes by industries. The number of disputes, workers involved, and aggregate working days lost in disputes in particular industries in the war and peace periods is a good indication of (1) the chief sources of industrial unrest, (2) the relative magnitudes of probable production losses due to disputes, and (3) the seriousness of the production losses to the economy.

In both the war and peace periods, the greatest proportion of disputes occurred in essential industries: Mining and Quarrying, and Metal, Engineering and Shipbuilding. The greatest proportion of workers involved in disputes similarly occurred in the above two groups of essential industries in the war period, but the Metal, Engineering, and Shipbuilding industries were supplanted in importance by the Textile industry in the peace period. These observations suggest that Mining and Quarrying has been the greatest and most persistent center of industrial unrest in both

war and peace, and that wartime activity shifts unrest from peace-time industries to the more vital portions of the economy.

The latter conclusion received more concrete support from the facts. Whereas 72 per cent of all disputes in the war period were attributable to essential industries, only 55 per cent of all disputes in the peace period were traceable to the same industrial origins. Whereas 83 per cent of all workers involved in disputes in the war period were accounted for by essential industries, only 58 per cent of all workers involved in the peace period were accounted for by the same groups of industries. On the one hand, in both the proportion of disputes and workers involved, the Metal, Engineering, and Shipbuilding industries experienced the greatest percentage increase, with Mining and Quarrying second. On the other hand, Other Industries and Services, a catch-all classification of various peace-time pursuits, experienced the greatest percentage decrease, with the Textile industry a close second in the matter of disputes. In the matter of workers involved the Textile industry had the greatest percentage decrease, falling from 30.0 per cent to 2.4 per cent in the war period. (See Table II.)

Although the over-all number of working days lost in the war period was considerably smaller than that in the peace period, the essential industries were responsible for a significantly greater proportion of working days lost in the war than in the peace period. Whereas 80 per cent of aggregate working days lost in the war period were accounted for by essential industries, only 35 per cent were accounted for by these same industries in the peace period. Furthermore, the greatest percentage increase occurred in the most vital group of industries, i.e. Metal, Engineering, and Shipbuilding, with Mining and Quarrying a close second. The greatest percentage decrease occurred in the Textile industry, where the average number of days lost in the war period dropped 49 per cent as compared with the peace period. Even more significant is the fact that Metal, Engineering, and Shipbuilding not only experienced a greater proportion of total days lost in the war period, but was the only industry for which the average number of days lost in the war period was greater than the average number of days lost in the peace period. (See Table II.) On the whole, this abnormal loss was due to the "great changes in processes, which need an adjustment of piece rates, the introduction of large numbers of men and women, whose wage-rates had to be fitted

TABLE II

Trade Disputes by Industries in Great Britain and Northern Ireland, 1927–38, and 1939–42[1]

	1927–38						1939–42					
	Average Number of Disputes	Per Cent of All Disputes	Average Number Workers Involved (000)	Per Cent of All Workers Involved	Average Number Working Days Lost (000)	Per Cent of All Working Days Lost	Average Number of Disputes	Per Cent of All Disputes	Average Number Workers Involved (000)	Per Cent of All Workers Involved	Average Number Working Days Lost (000)	Per Cent of All Working Days Lost
Mining and Quarrying	203.3	37.7	150	49.0	919	28.1	457.0	41.4	203	55.6	583	47.3
Metal, Engineering and Ship-building	92.1	17.1	28	9.1	228	7.0	341.0	30.9	98	26.9	397	32.2
Textile	56.2	10.4	92	30.0	1,751	53.5	56.0	5.1	9	2.4	60	4.9
Clothing	22.6	4.2	4	1.2	53	1.6	23.0	2.1	6	1.8	22	1.8
Building	53.3	9.9	6	2.0	74	2.3	87.0	7.9	21	5.9	67	5.5
Transport	29.4	5.9	16	5.1	128	3.9	45.0	4.1	12	3.4	40	3.2
Other Industries and Services	80.6	14.9	11	3.6	120	3.7	95.0	8.6	15	4.1	63	5.1
All Industries	539.6	100.0	306	100.0	3,273	100.0	1,104.0	100.0	365	100.0	1,232	100.0

[1] The data for the years 1927 to 1937: Twenty-Second Abstract of Labor Statistics of the United Kingdom, Cmd. 5556, HMSO, July, 1937, pp. 128, 129.
The data for the years 1937 to 1943: Ministry of Labour Gazette, May, 1939, p. 160; May, 1941, p. 98; January, 1943, p. 6.

into an already complicated scheme, and the number of trade unions involved."[2]

CAUSES AND RESULTS OF DISPUTES

The war period resembles the peace period in both the chief and the lesser causes of disputes. The chief causes of disputes in both periods were (1) wage questions, (2) employment of particular persons, and (3) working arrangements, rules and discipline, the relative importance of each given in the order named. Similarly, the lesser causes of disputes were (1) trade unionism, (2) hours of labor, (3) sympathetic action, and (4) other questions. Although the chief and lesser causes of disputes were responsible for approximately the same proportion of disputes in both periods, some of the causes individually underwent significant changes. "All wage questions" and "working arrangements, rules, and discipline" increased seven per cent and five per cent, respectively. "Employment of particular persons" decreased by seven per cent. A further analysis of "all wage questions" discloses that disputes caused by the demand for wage increases increased eleven per cent, the imposition of wage decreases fell eight per cent, and other wage questions rose four per cent. Disputes caused by trade unionism fell by an equal amount, i.e. four per cent.

As stated above, the majority of disputes in the peace period, on the whole about 75 per cent of all disputes, were caused by "all wage questions" and "employment of particular persons." While other causes of disputes are observed to move directly with, and roughly in proportion to, the national income, both of the above major causes of disputes rose in the depression years, fell to a minimum and were relatively stable in the normal range of income, and rose rapidly in the more prosperous years. Apparently, the observed cyclical pattern of disputes as a whole is attributable to the predominating pattern of these two causes. (See Table III.)

"All wage questions," which is the aggregate of disputes caused by demands for wage increases, the imposition of wage decreases, and other wage questions, accounted for approximately half of all disputes for the peace period as a whole. While disputes caused by the imposition of wage decreases were the greatest

2. A. L. Bowley, Labour Disputes in War-Time, Royal Economic Society, Memo. 96, October, 1943, London and Cambridge Economic Service, p. 6.

TABLE III

CAUSES OF TRADE DISPUTES AND MONEY NATIONAL INCOME IN GREAT BRITAIN AND NORTHERN IRELAND, 1927–42[1]

Year	Money National Income less Pay to Armed Forces[2] (£000)	Number of Trade Disputes Arising from Various Causes[3]								
		Wage Increase	Wage Decrease	Other Wage Questions	Hours of Labour	Employment of Particular Persons	Working Arrangements, Rules and Discipline	Trade Unionism	Sympathetic Action	Other Questions
1932........	3,325	21	131	78	10	89	43	14	3	..
1931........	3,450	32	114	86	33	84	52	18	1	..
1933........	3,550	36	60	92	4	90	44	24	6	1
1934........	3,700	79	49	100	18	121	62	37	3	2
1930........	3,800	38	91	120	19	79	45	28	1	1
1927........	3,900	35	71	59	22	68	22	26	3	2
1928........	3,925	26	63	80	15	69	29	13	6	1
1929........	3,925	42	82	100	12	107	40	40	3	5
1935........	3,925	85	42	128	11	148	84	36	16	3
1936........	4,150	162	34	173	23	221	99	84	20	2
1938........	4,350	139	34	166	41	257	130	92	11	5
1937........	4,350	323	19	246	43	265	100	110	15	8
1940........	5,390	218	33	233	27	196	164	35	12	4
1941........	6,220	332	55	362	55	188	212	33	9	5
1942........	6,885	394	55	363	47	166	234	18	12	14

[1] Lack of data on money national income for 1939 excluded that year from the table.

[2] For 1927–38, Twenty-Second Abstract of Labour Statistics of the United Kingdom, Cmd. 5556, HMSO July, 1937, pp. 132–133. For 1937–42, Ministry of Labour Gazette: June, 1938, p. 214; May, 1939, p. 161; May, 1941, p. 98; May, 1942, p. 106; May, 1943, p. 62.

[3] Op. cit. See Table I, footnotes 2 and 3.

component of all wage disputes in time of depression, disputes caused by the demand for wage increases occupied a similar position in prosperity. Other wage questions remained stable in depression, but rose as more prosperous years were ushered in. This implies that wage decreases in time of prosperity form a smaller proportion of all wage questions than wage increases in time of depression.

The small number of disputes in the war period is explained by the relatively low number of strikes and lock-outs caused by wage questions, employment of particular persons, and trade unionism. Other causes of disputes continued to vary directly with, and in proportion to, the national income in the war period. As stated previously, the attitude of the unions toward the war, the utilization of collective bargaining machinery wherever possible, the work of the National Arbitration tribunal are the main reasons for the relatively small number of disputes attributable to the above causes. In addition, disputes caused by wage questions are low because the British have succeeded in stabilizing the cost of living. The automatic wage adjustments for changes in the cost-of-living indexes of individual areas and the use of subsidies on a wide scale to keep prices in line have had good effect toward this end. By January, 1943, The Ministry of Labour Gazette's wage-rate index exceeded the cost-of-living index by five per cent.[3]

Results of disputes are classified according to whether the settlement is in favor of the workers, in favor of the employers, or a compromise. Disputes settled in favor of employers constituted the largest category in both the war and peace periods. Compromises were a less frequent result, but exceeded settlements in favor of workers by a considerable margin in both periods. The war period differs from the peace period in that the proportion of disputes settled in favor of employers increased, chiefly at the expense of compromises, but also of worker victories. While employer victories rose from 42 per cent in the peace period to 51 per cent in the war period, compromises fell from 36 per cent to 29 per cent, and worker victories from 22 per cent to 20 per cent. (See Table IV.)

3. Ministry of Labour Gazette, January, 1943, p. 5. The wages index was put at 132 or 133 above September, 1939; the cost of living index at 128 above September, 1939.

TABLE IV

RESULTS OF TRADE DISPUTES AND MONEY NATIONAL INCOME
IN GREAT BRITAIN AND NORTHERN IRELAND, 1927–42[1]

Date	Money National Income Less Pay to Armed Forces[2] (£000)	Results of Trade Disputes Beginning and Settled in Year[2]					
		Disputes Settled in Favor of Workers		Disputes Settled in Favor of Employers		Disputes Settled by Compromise	
		Per Cent	Number	Per Cent	Number	Per Cent	Number
1932...	3,325	22.62	88	43.16	168	33.93	133
1931...	3,450	25.71	108	39.52	166	34.76	146
1933...	3,550	21.00	75	41.45	148	37.53	134
1934...	3,700	28.66	136	39.49	186	31.84	149
1930...	3,800	16.58	71	36.72	155	46.44	196
1927...	3,900	19.81	61	38.31	118	41.88	129
1928...	3,925	13.91	42	47.68	144	38.41	116
1929...	3,925	20.65	89	38.05	164	41.30	178
1935...	3,925	26.94	149	38.51	213	34.53	191
1936...	4,150	26.52	217	42.66	349	30.80	252
1938...	4,350	23.20	203	49.82	435	27.08	237
1937...	4,350	22.30	252	48.40	546	29.30	331
1940...	5,390	18.87	174	54.12	498	27.01	248
1941...	6,220	17.96	224	49.72	622	33.32	405
1942...	6,885	19.42	253	51.50	671	29.08	379

[1] Lack of data on money national income for 1939 excluded that year from the table.
[2] For 1927–37, Twenty-Second Statistical Abstract of the United Kingdom, p 134. For 1937–39, Ministry of Labour Gazette: June, 1938, p. 215; May, 1939, p 161; for 1940–42 monthly compilation of totals from Ministry of Labour Gazette with two corrections The discrepancy between the summation of the monthly totals and the yearly total was adjusted for by a proportional addition to each of the types of results listed above Secondly, where work was resumed pending negotiations, it was assumed that 50 per cent of such disputes were settled as compromises, 30 per cent in favor of workers, and 20 per cent in favor of employers.
[3] See Table I, footnotes 2 and 3.

An analysis of the peace period discloses two significant facts with regard to the results of disputes. First, during the depressed and prosperous years disputes settled in favor of employers were greater than either compromises or worker victories. Second, during the depressed and prosperous years disputes settled in favor of employers increased at a rate greater than either compromises or worker victories. Thus, the proportion of victories garnered by employers increased at a quickening pace as the national income departed from the normal level of the period.

For the most part, the above relationship is due to the fact that in time of depressed economic activity workers are resisting

wage decreases, and that in more prosperous years employers are resisting wage increases. The relative absence of disputes caused by the demand for wage increases explains the relatively smaller shift in the settlement of disputes in favor of employers in the war period. For the proportion of all disputes settled in favor of employers is significantly smaller than one would anticipate from the extrapolation of the peace-time trends. This conclusion has significance for the degree of industrial peace. By diverting wage issues to collective bargaining and conciliation machinery, and, in the last resort, to the scrutiny of the National Arbitration Tribunal, the expected proportion of employer victories has been reduced and the perpetuation of grievances has occurred less frequently. Furthermore, the effectiveness of British policy now has influenced the probability of the occurrence of disputes in the future. A sound and enduring basis for industrial coöperation has been attained in this regard.

CONCLUSION

British experience with labor disputes in war-time presents an exemplary record. Although losses to production due to labor disputes have not been minimized in an ideal sense, such losses have been drastically cut and kept in hand. On the whole, the successful operation of collective bargaining, of the government's policy of stabilizing the cost of living, and of compulsory arbitration have produced an atmosphere in war-time making for a relatively high degree of industrial peace.

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PARETO ON POPULATION, II

VI. OPINION, LAW, AND POPULATION MOVEMENTS

Pareto did not believe that population movements are much influenced by law or by subjective attitudes and opinions regarding such movements. He did not even include law among the determinants of social equilibrium;[1] while in his earlier works he sometimes described theories as mere verbal justifications of facts.[2] He looked upon law and opinion as more or less epiphenomenal in character — as reflecting or manifesting the more fundamental elements by which human conduct, a considerable part of which is illogical, is shaped.[3]

"The question of the growth of population and of obstacles" thereto is one of those with which men appear unable to concern themselves dispassionately, economic and other factors operating in combination to shape opinions on this matter. For the ratio of numbers to wealth is among the most powerful of social facts, impinging upon many interests and affecting various motives. Frequently spokesmen for a given class support policies at variance with its basic interests, either because they are not aware of these

1. T, 2060. See N. S. Timasheff, "Law in Pareto's Sociology," American Journal of Sociology, XLVI, 1940, pp. 139–149.

2. M, p. 433; also pp. 415–416, 432. In the Trattato (149–150; see also Parsons, op. cit., pp. 187, 190ff.) Pareto distinguished carefully between the *objective* aspect and the *subjective* aspect of social phenomena, and described as *logical* actions those which conjoined means to ends from the standpoint of both the subjective doer and the adequately informed outside observer. Political economy deals largely with "logical actions" (T, 152). "In ordinary logic," he pointed out (T, 514), "the conclusion follows from the premises. In the logic of sentiment the premises follow from the conclusion."

3. This thesis, foreshadowed in his earlier writings, is developed fully, but with qualification, in the Trattato. See Sec. VIII below. Pareto did not deny importance to ideas. See T. Parsons, "The Rôle of Ideas in Social Action," American Sociological Review, III, 1938, pp. 663–664.

interests, or because other elements, inconsistent with these interests, shape their attitudes. Such discrepancy between subjective attitude and objective interest, however, if expressed only in terms of belief, law, or opinion, exercises little if any influence upon population movements, for these are regulated by other circumstances. Seemingly, opinion is conditioned by the population situation: when the population of France was growing, savants and statesmen preached Malthusianism; when it became stationary, they called for increase.[4]

In consistence with his view that class interests are not in harmony,[5] Pareto pointed out that population growth affects differently the interests of the several classes composing society, operating directly to alter the comparative numerical size of these classes, and indirectly to redistribute power. Thus great population growth is to the interest of the wealthy and of the political oligarchies, assuming the distribution of power to be unaffected thereby, because when labor is abundant it may be purchased on terms favorable to employers, and when subjects are numerous, the power of the politically dominant class is great; for opposite reasons it is to the interest of the masses that they restrict their numbers. If, however, the distribution of power does not remain constant in the face of population growth, the effect of population growth upon the respective interests of the well-situated minority and of the mass of poor may be otherwise. Suppose that population growth alters the probability of revolution. Suppose that revolution can be accomplished with greater ease when the masses are misery-ridden, and that population growth makes for misery. Then the leaders of the masses may properly urge them to multiply and augment their misery,[6] while the spokesmen for the dominant classes may with propriety preach family limitation and so try to avert population pressure which threatens their security. If, on the contrary, revolution is more likely to take place when the poor are enjoying comfort — and this supposition is more nearly in accord with the facts —[7] the dominant classes, provided that they

4. M, pp. 415–420.
5. This view runs through his works; e.g. see S, II, Chap. 12.
6. Some Italian syndicalists argued that family size should not be limited, inasmuch as a high birth rate would depress wages and hasten the revolution. See R. Michels, Revue d'économie politique, XXVII, 1913, pp. 614–616, 624–625.
7. M, pp. 401–404. Cp. L. P. Edwards, The Natural History of Revolu-

are actuated solely by the economic motive, will seek to check the spread of comfort, while the leaders of the poor will fight for its diffusion.[8]

The population doctrines and policies advanced by spokesmen for given social classes, however, often run counter, just as does the procreative behavior of some members of these classes, to the true interests of the classes in question. For this several circumstances are responsible. Neither spokesmen for a given class nor all its members are completely aware of the true interests of the class to which they belong. Long-run advantage is sacrificed to short-run advantage. Non-economic motives (e.g. ethical, metaphysical, aesthetic, etc.) issue in behavior at variance with economic interest. Thus, in Pareto's day, members of the upper classes stood for contradictory policies and practices: many opposed birth-control on religious, ascetic, or hypocritical grounds,[9] while others (nationalists and conservatives) favored the enactment of populationist measures; yet others sanctioned birth-control as a means of conserving the family patrimony. Generally, blindness to their real interests, together with ethical motives and physiological decadence, was preparing the ruin of the upper classes.

Contradictory policies and practices were pursued also in the lower classes. The leaders of the poorer classes — "in a word the members of the new *élite* who are preparing to dispossess those of the ancient *élite*" — supposed at times that misery, at other times that comfort, conduces to revolution; for this reason some favored population restriction, while others (e.g. the radical-socialists in France), unaware that populationist legislation would destroy the basis of their power, supported such legislation. The poor themselves, because of their desire for the earnings of child-labor, or because of imprudence, often were very prolific. Moreover, the

tion, Chicago, 1927, pp. 33ff. Pareto believed that "socialist sentiments augment as the result of a long period of peace and of the growth of wealth," whereas counter-sentiments tend to become weaker. See M, p. 401; S, I, pp. 62–75.

8. M, pp. 416–417.

9. For the opponents of birth control, for sex reformers, and for anti-libertarians generally Pareto, who by temperament and practice apparently was a sybarite (Borkenau, op. cit., p. 15), manifested distaste. See T, 1344–1345, 1352; S, I, pp. 96–97; Le mythe vertuiste et la littérature immorale, Paris, 1911, pp. 20–22. Birth control, he said, was viewed by its opponents as a worse crime than blasphemy or treason (T, 1126–1127, 1345). He enumerated St. Jerome's qualms regarding pregnancy and commended his writings to the opponents of birth control as in need of expurgation (T, 1370).

desire of the poor for present material and sexual satisfactions pressed even those of their leaders who were aware of the need for population restriction to ignore the population question and to promise instead that, when capitalism had been destroyed and the "golden age" established, "all these wants, all these desires" could be "satisfied unreservedly."[1]

Equally contradictory were the population policies of politicians. They were always avid for subjects to despoil,[2] and therefore usually pretended that Malthusianism was against the interests of public and country;[3] yet they supported policies that checked rather than stimulated population growth. They piled up governmental expenditures and swelled the tax burden; they wasted resources on military expansion and colonial expeditions; they imposed tariffs,[4] thereby destroying wealth and increasing the cost of living. In general, they ignored the fact "that the best way to favor the reproduction of men, as that of animals, is to assure them a certain degree of well-being."[5]

Law, religion, and moral preachings exercise little if any influence upon population movements, Pareto concluded; they can do little more than sanction what the *moeurs* (which rest in considerable measure upon economic facts) support,[6] or what is consistent with the prevailing residues or sentiments.[7] Roman

1. M, pp. 416–419. Some (among the people) went so far as to maintain that satisfaction of the sexual instinct must be subject to no restriction; or that, because of the decline in natural fecundity allegedly attendant upon increase in intellectual activity, there was nothing to fear from unrestrained satisfaction of sexual desires.

2. "Politicians desire to have the maximum of taxpayers to skin, and it is truly amusing to hear them lament over the much too slow increase of their subjects" (C, 209, n.). In the past only honest men like Voltaire and Montesquieu had criticized those who said that the multiplication of subjects is the Prince's chief interest. See C, 209; T, 1499.

3. Politicians plumped for Malthusianism when they feared proletarians were increasing too rapidly (T, 1499).

4. Later he observed (T, 2208) that protectionism might stimulate class-circulation sufficiently to offset the direct economic effects of tariffs. See below, Sec. VIII.

5. C, I, pp. 140 n., 143 n., 143–144. The vices and the prejudices of the directing classes and of the people were primarily responsible for the destruction of wealth (C, 552).

6. C, 245, 259–262, 580; S, II, p. 10. Economic resources can be used, whoever, to reduce preventable mortality (C, 241–242).

7. T, 1499. In his earlier works he had noted the importance of sentiments; in the Trattato he reduced much of his analysis to terms of interests and residues. See below, Sec. VIII.

populationist legislation accomplished nothing; Colbert's measures failed, as did those enacted during the French Revolution; late nineteenth-century French legislation had been equally ineffective, in part presumably because protectionism, militarism, and socialism were consuming French capital.[8] The reproductive response of a people to increases in wealth depends upon their tastes and habits, upon the standard of life. Accordingly, such increases in wealth and well-being as would stimulate slaves or Hindus to multiply, or as had caused medieval populations to grow, were not sufficient to impel the French and other western peoples to augment in number.[9]

VII. OPTIMA

The population of an area may be described as at an optimum level when the value of some index of human activity or condition, which varies with numbers, stands at maximum. Some indices stand at maximum when a population is small, others when it is large; hence what constitutes an optimum number is conditioned by the index being maximized — a military maximum calls for a larger population than does a per-capita-output optimum. Furthermore, the population that maximizes a given index from the standpoint of any one class may be greater or less than that which maximizes the same or a similar index from the standpoint of some other class: the population consistent with a maximum wage level is smaller than that consistent with a maximum rent level. Again, what constitutes the *present* optimum number for any class and index is conditioned by the comparative weights assigned *present* and *future* circumstances. Finally, both the *rate* of population growth and the distribution of this growth among classes, as distinguished from mere size of population, may affect the values of certain indices. There is, therefore, no one optimum, even though,

8. C, 264–265; S, I, p. 82. Such legislative non-accomplishment "may indeed be, in part, the effect of future socialist laws" (C, 264).

9. C, I, p. 143 n. Elsewhere (C, 561, 567, notes) he criticizes De Laveleye for proposing that the French people, in order that they may increase, adopt the Javanese form of social organization. A Frenchman is not content with a daily fistful of rice. Moreover, the civilization produced by the Javanese *dessa*, or by the Russian *mir*, has not attained the level of the Graeco-Roman or modern western worlds, where private property has prevailed. Elsewhere (S, II, pp. 10, 35) Pareto described the populationist proposals of Plato and Morelly as superior to those of the French and other populationists, who advocated that men multiply without limit but said nothing of providing subsistence.

within limits, as numbers rise above the zero level, all indices may increase in value; for when population reaches given levels some indices begin to fall in value, whereas others continue to increase. Moreover, as non-demographic circumstances change, the functional relationship between numbers and given indices changes.

Pareto analyzed at length the indices of ophelimity and utility which may be maximized, but he did not examine in detail the functional relations between population density and growth, on the one hand, and these indices on the other. In the main he discussed inter-group conflicts in interest with respect to numbers, and divergences in the movement of the several indices in relation to that of population factors.

In the *Cours*, in which his chief concern was with ophelimity or individual satisfaction, he touched upon the relation between numbers and both ophelimity and utility.[1] He identified four distinct population maxima: (*a*) of ophelimity, or individual satisfaction; (*b*) of utility for the human species, or for one of its determinate parts; (*c*) of the number of individuals composing a nation; (*d*) of the military and expansionist force of a nation, which depends on both the quantity and the quality of the population.[2] One may infer from his general discussion that while each of these indices increases, within limits, as population increases, the population total which maximizes some one of these indices will be greater or less than the total which maximizes some other of these indices; e.g. the population consistent with the maximization of ophelimity is smaller than that consistent with the maximization of the military and expansionist force of a nation. One may infer also that the actual population total will not tend to fall much short of the smallest of these maxima, or to exceed the greatest.

The population consistent with the maximization of ophelimity does not coincide, as a rule, with that consistent with the maximization of one of the measures of utility. Ophelimity may run

1. Ophelimity refers to individual pleasure or satisfaction; it describes a subjective property of a thing, dependent upon both the thing and the individual, in virtue of which the need or desire of this individual is satisfied. Utility refers to what is "useful"; it designates any property of a thing favorable to the development and prosperity of an individual, race, species, or other group. (See C, 5–10, 181; also T, 1918.) Pareto later showed (e.g., M, pp. 547ff.) the theory of equilibrium to be independent of concepts of ophelimity, utility, etc.; but, as Hicks observes (Value and Capital, London, 1939, p. 19), he did not completely give up the use of these concepts.
    2. C, 209.

counter to utility; "the hedonistic maximum of the individual, to that of a nation or species";[3] while the utility of the individual may not coincide with that of the species. Preservation of the race or species in number, or its augmentation, may call for greater fertility than is consistent with the maximum of ophelimity of individuals; and it may give utility to practices (e.g. protection of the young) which do not posses utility from the individual point of view. Greater fertility than is consistent with the maximization of the ophelimities of individuals is required to insure the maintenance, or improvement, of the quality of the race; for when gross fertility is relatively great, selective mortality more effectively eliminates the unfit (i.e. the less fit deviates from the average type).[4]

The population which maximizes ophelimity for the members of one group frequently differs from that which makes for a maximum of ophelimity for members of other groups. The "maximum of ophelimity of the directing classes" is usually at variance with that of the working classes; and it rarely coincides "with the maximum of *utility* for the nation, or of the human race." In like manner, the maximum of ophelimity for any other one class, considered in isolation, tends to differ from that of other classes and from that of utility for other groups.[5] "The ophelimity of parents is not identical with that of children," for it is the parents, and not the child, who choose to transform savings into personal capital; whence it is "the egoism of the parents, putting in the world more

3. C, 173, 208; also C, I, p. 141 n. Elsewhere (C, 628) he states that ophelimity and utility for an individual do not coincide when the individual cannot foresee the consequences of his actions, or when he cannot accurately compare the future with the present.

4. C, 627–629; M, pp. 63, 424, 425. The discrepancy between the fertility levels consistent, respectively, with the maximization of individual ophelimity and with the improvement of the race is very great when the individual is not susceptible of inheritable modifications; then selection must operate by destroying large numbers of relatively unfit and so occasion much suffering (C, 629). Elsewhere (M, p. 425) he observes that a proper balance must be struck between the utility of the species and that of the individual, but he does not suggest a common denominator or set of weights to accomplish this. (However, see T, pp. 1466–1470, notes.)

5. C, I, p. 141 n; M, pp. 416–419, 501–503, 666. Elsewhere (C, 209 n.) he observes that "the politicians want the largest possible number of taxpayers to despoil"; and he notes the similarity between this view and that of rulers as reflected in the writings of the Mercantilists.

children than they can conveniently nourish, which is the cause of a great part of the miseries of humanity."[6]

In the *Trattato* Pareto inquired at length into the nature of utility and into the relations between various species of utility, but he barely touched upon the relation between utility and numbers. He distinguished between ophelimity and utility, and between the individual and the collectivity point of view. Ophelimity *for* a collectivity is at a maximum when further change, while it serves to augment the ophelimity of some individuals, diminishes that of others. It therefore is analogous to, but not necessarily identical with, given individual maxima. There can be no maximum of ophelimity *of* a collectivity, because the ophelimities of individuals are heterogeneous and not addable. In the realm of utility, Pareto, as a sociologist, distinguished between utility to the individual and utility to the community or collectivity, and between the maximum of utility *for* the community and the maximum of utility *of* the community. The maximum of utility *for* a community is essentially a sum arrived at after heterogeneous utilities have been reduced to terms of a common denominator. The maximum of utility *of* a community presupposes an end which the collectivity as a unity ought to pursue.[7]

Pareto built no optimum theory of population on any of these species of utility or ophelimity. A population factor — density, size, rate of growth — is at the optimum when some index which is conditioned by the population factor is at a maximum. Pareto's analysis reveals that the various indices of ophelimity and utility do not continuously vary together and in the same direction as some other "independent" variable (e.g. population factor) changes. Thus, what constitutes a population of proper size, or a rate of population growth of proper magnitude, depends upon what index of utility (or ophelimity) is to be maximized. Maximi-

6. C, 268. Hence parents must be charged with the tutelage of their offspring. Elsewhere (C, 567 n.) he says it "is not the task of economics" to say whether it is better for men to multiply like rabbits, as do the Javanese, or to carry their "aspirations further," as do the English.

7. Parsons concludes: "This basis of unity Pareto finds in the last analysis to lie in the necessary existence of an 'end the society pursues.' That is, the ultimate ends of individual action systems are integrated to form a single *common system of ultimate ends*, which is the culminating element of unity holding the whole structure together." See op. cit., p. 249, his italics; also pp. 241–249 on Pareto's "social utility." See Pareto, T, 2110–2143, 2271, 2408 n.; cp. M, pp. 501–503.

zation of the utility *of* the community in terms of prestige and military power calls for as large a population as is attainable short of impoverishing the community. Maximization of utility *for* the community calls for a much smaller population and a lower growth rate, for now sacrifices must be balanced against the profits accruing from prestige and military power. When proletarians "refuse to have children because children merely increase the power and profits of the ruling classes, they are dealing with a problem of maximum utility *for* the community." The counter-arguments of the ruling classes usually run in terms of the maximum *of* the community, even though they are commonly disguised in terms of the maximum for the community.[8]

Pareto's discussion of the relation between numbers and population growth, on the one hand, and indices of ophelimity and utility, on the other, indicates that while he did not suppose population to move in a manner consistent with the maximization of any one of these indices, he did believe that the equilibrating forces within society served to limit the extent to which population movements could cause the indices of ophelimity and of utility for the individual and the community to deviate from their maximal values. That equilibrium which gives the maximum of ophelimity is not attained, because population movements depend upon non-economic as well as upon economic conditions;[9] but it will be approached, inasmuch as population growth is determined so largely by economic conditions,[1] and as there is a limit to the extent to which imperfections of foresight and knowledge can cause numbers to exceed, or fall short of, the level consistent with the

8. Earlier (M, pp. 17-19, 475-476) Pareto observed that man is a *homo ethicus* as well as a *homo oeconomicus;* whence particular interests tend to be hidden in the form of the general interest.

9. C, 172, 268. "Free competition assures the maximum of ophelimity" on condition that "each individual is free to choose, between two courses, which he prefers"; this maximum "is obtained only when the production of men is proportioned to the need for personal capital" in the same manner as the production of locomotives is proportioned to the need for them. (C, 268, also 473, 729). See also next note.

1. C, 182; and T, 152, where economic action is described as largely logical; see also Sections I and III of the first instalment of this paper (this JOURNAL, August, 1944). "In so far as he acts logically, every individual tries to secure a maximum of individual utility." See T, 2131, 2122; also 2118-2119, where he says that individual utility is sacrificed to collective utility, as a rule, in virtue of non-logical impulses, and 2143, where he states that the form of society is not determined solely by logical thinking.

maximization of ophelimity or utility from the individual point of view.[2] There appears to be a limit also to the extent to which the distribution of residues can deviate from that which is consistent with the maximization of utility.[3] One may infer from Pareto's discussion that so long as an increase in numbers tends to increase the value of each of the indices of ophelimity and utility, numbers tend to grow; but that when further increases in number decrease some indices, while increasing others, resistance to growth begins to augment.[4]

VIII. Heterogeneity and Selection

In the *Manuel*, in which as in the *Cours* he was primarily concerned with the problem of economic equilibrium, Pareto declared that the character of a society is determined principally by four species of facts: heterogeneity and hierarchy, natural and social selection, the succession of aristocracies, and per capita wealth.[5] His discussion of social physiology in the *Cours* is in similar vein. In the *Trattato*, in which he was concerned with social equilibrium, Pareto treated at length of heterogeneity, inter-class circulation, and selection; but he made no use of his well-known curve of income distribution and did not discuss natural selection.[6]

Society, he always supposed, is "a hierarchically organized heterogeneous mass"; it is at all times dominated and governed by an *élite*, or aristocratic minority, composed predominantly of superior individuals well endowed with qualities that assure power.[7]

2. C, 41, 172–173, 267–268, 628–629.

3. T, 2316, 2418, 2429.

4. A. M. Carr-Saunders had something of this sort in mind when he wrote that the desirable density of population tends to be approximated. See The Population Problem, Oxford, 1922, pp. 230, 236, 292.

5. M, p. 425. The concept of hierarchy may be employed in two ways: it may be used to describe the unequal manner in which power, or control, is distributed among the individuals composing any social organization, such as a corporation, a society, or a state; it may be used to describe the fact that men, when rated in terms of some index of quality or capacity, differ markedly, a few ranking high, and many ranking low. The condition of hierarchy, in the former sense, originates in the nature of social organization; in the latter sense, in the nature of man. It is with hierarchy in the latter sense that Pareto is primarily concerned.

6. In the Trattato, in which he developed views foreshadowed in the Manuel and the Systèmes Socialistes, he refers only once, but with approval, to the income curve (T, p. 43); he emphasized the limitations to social Darwinism (T, pp. 828, 1770, 2142).

7. M, pp. 422–423, 380; S, I, p. 28. Pareto claims to use the term aristocracy in the etymological sense of "better." In his earlier works he draws upon

He looked upon society, furthermore, much as if it consisted of an underlying immobile and relatively changeless human mass surmounted by a mobile and changeful human super-structure; for he viewed social change as largely the product of the interclass circulation of individuals, and historical oscillation as largely the result of the replacement of one aristocracy or superstructure by another.

From his analysis of income distribution Pareto drew inferences concerning the organization of society and the qualitative composition of its personnel; for he supposed that the distribution of human qualities and differences which presumably underlie income distribution also determine in significant degree the organization and the power relationships of society. The form of the curve of income distribution,[8] as developed by Pareto, "is the result of all the forces that act upon society"; it does not vary greatly in space, in time, or with social organization, and it does not descrive the binomial distribution. It reflects the "nature" of men, the distribution of the ensemble of qualities favorable to the acquisition and retention of wealth; "it probably depends upon the distribution of the physiological and psychological characters (caractères) of men,"[9] and perhaps also upon the manner in which capital is combined with men. Disposing men according to any

O. Ammon, M. R. Benini, J. Novicow, V. de Lapouge, and others. Livingston points out (T, p. 1477, n.) that Pareto fails to acknowledge his indebtedness to J. Bentham, G. Mosca, J. G. Frazer, and others.

8. The income curve is skew toward the large values of income, its variation from the modal income value toward inframodal values being limited by the fact that those who receive less than the minimum required to live must disappear (M, pp. 384–385). While the curve for all incomes may be expressed as a straight line, that for incomes from labor is concave, that for incomes from mobile capital, convex (C, pp. 958–959).

9. C, pp. 957, 960, 962, 994, 1008, 1012; M, pp. 384–385; S, I, pp. 26–28, 161–164. Pareto admitted that the part of his curve relating to incomes at or very near the bare subsistence level was hypothetical, and suggested that in ancient times, when famines were frequent, the *relative* number of incomes in the neighborhood of bare subsistence was greater than in modern times (M, pp. 384–386). Critical evaluation of this curve does not fall within the scope of this paper. For an appraisal of Pareto's assertion that the form of his curve is stable, see C. Bresciani-Turroni, Econometrica, VII, 1939, pp. 107–133. For a general account and good bibliography see H. T. Davis, The Theory of Econometrics, Bloomington, 1941, Chap. 2. Davis (ibid., pp. 201ff.) suggests that political stability comes to an end when what he calls the "concentration ratio" rises above, or falls below, stipulated critical values; Pareto did not pursue this tack. (See next note.) For a critical appraisal of the views of Pareto and others on the relation between ability and income, see H. Staehle, "Ability, Wages, and Income," Review of Economic Statistics, XXV, 1943, pp. 77–87.

particular aptitude or talent will yield a similar distribution: the facts of heterogeneity and hierarchy are independent of the index employed to grade men. "The classes called *superior* are also generally the most wealthy." It follows, from the dependence of the distribution of income upon the "nature" of men, that inequality is susceptible of appreciable reduction, and economic organization of significant modification, only in proportion as the "natures" of men are susceptible of alteration.[1]

The position of individuals on the income curve is subject to change, and the average level of income may rise or fall, but the form of the curve is comparatively constant. The colt becomes a horse, and movements occur within each, but the form of the animal persists. An income class increases in absolute magnitude when births exceed deaths within this class, or when more individuals move into this income class from neighboring classes than pass out of it into neighboring classes; it decreases in magnitude when movements of an opposite character occur. If, however, the magnitude of a given class changes, and that of other classes does not change correspondingly, repercussions set in until the magnitude of the class in question once again is in proper relation with those of other classes. If, for example, deaths exceed births in a given class, this deficit tends to be compensated by the movement of wealth and by the immigration into this class of individuals from neighboring classes. Where, as in France, family size in the wealthy classes is relatively small, and barriers to circulation do not exist, the poorer classes have relatively better opportunity for advancement, and the rate of interclass circulation is greater, than in countries where family size among the wealthy is relatively large.[2]

Intra-society heterogeneity was frequently denied. For this, said Pareto, several circumstances were responsible: egalitarian prejudices, which attributed inter-individual differences to differ-

1. C, pp. 1008–1012; M, pp. 388–389; S, I, p. 28, also II, pp. 160–173; "La question sociale," loc. cit., p. 44. He observed (ibid., pp. 44–45) that inequality is not permanently determined by purely economic influences; it is modified, periodically, by the intervention of other factors, principally armed force, and now perhaps by political action. He supposed, presumably, that the factors which make for inequality always operate to restore it, even though it may be temporarily reduced. See also S, I, pp. 161–164, where he traces the supposed effects of collectivism on income levels and distribution.

2. C, pp. 1002–1006.

ences in environment; the pretensions of authors (e.g. Lombroso)[3] to greater precision than the facts warranted; the disposition of writers (e.g. Lapouge) to infer conclusions and formulate policies at variance with both theory and reality. It did not follow, for example, from some men's possessing certain qualities in greater measure than other men, that there existed a class (or race) "absolutely *better*" than the rest of the population, or that the *better* "must" govern the others.[4]

In one of his earlier works Pareto considered selection of three sorts: control of the maladapted, amelioration of the race, and vertical social mobility. Concerning the first he observed that the sentiment of justice, which protects society against its maladapted members, was being superseded by the sentiment of pity; whence the controls which make for social stability were growing weaker. Neither education of the maladapted nor threatening them with the consequences of their actions was an adequate means of control; while suppression of the maladapted, although in itself efficacious, was not practicable, because it led to frightful abuses and ran counter to the socially indispensable sentiments of altruism and pity. He did not resolve this problem, but he did imply that the force of the sentiment of pity needed to be diminished if adequate control of the maladapted were to be achieved.[5]

Most important of the selective agents upon which the quality of the race depends are natality and mortality, particularly the latter. Natural selection varies in intensity and character with income class. There is no eugenic selection among those whose incomes are at or near the bare subsistence level, and fall below it when individual or collective circumstances worsen; for here intense poverty and its concomitants eliminate good and bad elements alike. In the class next above, consisting of persons with incomes slightly above bare subsistence, "selection operates with maximum intensity"; for here the incomes received, while sufficient to preserve the "better elements," are not adequate to save all, the weaker elements being eliminated in large measure through

3. He commented critically on Lombroso's work in two notes in Giornale degli economisti, ser. 2, XIII, 1896, pp. 449–454, XIV, 1897, pp. 502–506.

4. C, pp. 993–996, 1000. One may say only that some races possess in higher degree than others qualities suited to enable them to prosper in given places and climates (997). Nationalistic prejudices favored the doctrine of inter-society heterogeneity (993).

5. S, II, pp. 133–139, 146–152. See below on eugenics.

high infant mortality, passage into the bare subsistence group, and the ravages of alcoholism, tuberculosis, etc.[6] Here are hammered out new aristocracies to replace those which degenerate; whence it is important for the future of a collectivity that selection remain rigorous in this class. In the higher income classes, which include the aristocracies, selection is not intense, because incomes are great enough to preserve relatively large numbers of feeble, incapable, or vicious individuals who would be destroyed if situated in very low income classes. The consequent accumulation of inferior elements in the upper and aristocratic classes is a principal cause of their tendency to decay and disappear; and when it is accompanied by an accumulation of superior elements in the lower classes, social instability and revolution usually ensue.[7]

Pareto admitted the possibility of dysgenic selection, but rejected the proposals of the eugenists. A society might deteriorate in quality, and in consequence social equilibrium might be upset if, with the progress of civilization, too many subjects of choice (i.e. individuals in whom life activity is most intense) were siphoned out of the inferior classes at the same time that diminution in the intensity of natural selection in these classes was serving to reduce the potential supply of choice subjects. Presumably enough subjects of choice were being furnished to the upper classes and cities, which both attracted and consumed them, by rural populations and also in some places (England, America) by laboring classes. Whether in time supply would fall short was not discoverable from available statistical data.[8] But if it did, a solution was not to be found in the "new 'eugenic' logic." The evidence did not support the eugenist view that dysgenic selection had destroyed ancient Rome, or their supposition that the prevailing aristocracy produced more persons of native intelligence than did the working

6. Alcoholism in part offsets the tendency of income increases to relax selection.

7. M, pp. 385–388, 429; C, pp. 1027–1029; S, I, pp. 28–33, II, pp. 139–141, 147. Pareto approved the theory of selection of Pfeffer, who believed that it operated by destroying the worst. He criticized Pfeffer's supposition that the numbers of individuals in the various living species are in stable equilibrium, saying that while the various forms of life are in equilibrium, it is dynamic rather than static in character. See C, p. 627.

8. C, 1029–1031; S, I, pp. 32–33. Pareto refers to the studies of Ammon, Jacoby, and Topinard, who claimed that dolichocephals, persons of activity and intelligence, tall blonds, and short brunettes were attracted on balance to designated cities (C, 1030 n.). Pareto appears not to have kept abreast of studies in human heredity.

classes. Furthermore, eugenics could never accomplish its purpose — sacrificing the ophelimity of the individual to the utility of the species — because, since man's nature was not susceptible of radical change, his behavior would continue to be conditioned by considerations of individual ophelimity and utility, as well as by those of utility of the species; and were force employed to overcome the nature of man and put eugenic measures into effect, the evil results would outweigh the benefits. From denying liberty to men afflicted with certain diseases it was but a step to denying liberty to men who entertained certain opinions, while from the establishment of state monopolies and the closed shop it was not many steps to the restriction of reproduction to the eugenic few and to the transformation of men into sheep. In the eugenist's scheme "the choice of the 'eugenic' and the care of the propagation of the race" were handed over to the politicians composing the State.[9] This scheme Pareto rejected on grounds of both efficacy and sentiment. He supposed, as did De Molinari, with many of whose opinions he was in accord, that amelioration of the race must be sought through individual morality: were men prudent and foresighted, they would procreate no more children than they could rear satisfactorily; and they would avoid procreation, if they were afflicted with hereditary defects.[1]

Pareto discussed social selection in his earlier works, but much less fully than in the *Trattato*. Two opposed sets of forces, one making for stability and the other for mutability and selection, were operative in collectivities. Sometimes one, sometimes the other, was ascendant, the opposition between the two usually assuming the form of a struggle between the older and the newer (or incipient) aristocracies. Mutability and selection originated in the desire and capacity of some men for advancement in the social hierarchy; they flourished when circumstances were favorable, as, for example, when prices were rising. Stability originated in both the institutions of private property and inheritance and the desire of the well-situated groups and aristocracies to perpetuate existing social arrangements of especial advantage to themselves. The maximization of utility is contingent, Pareto's analysis suggests,

9. C, 998–1001. Pareto occasionally described politicians in terms remindful of an ornithologist's account of the cow bird. Were physicians appointed to pass on eligibility to marry and then to fall under the control of political rings, the latter would enjoy veritable gold mines (S, II, pp. 157–158).
1. S, II, pp. 156, 158–160.

upon the striking of a proper balance between the forces favorable to stability and those favorable to social circulation and change. In the absence of such balance, disadvantage outweighs advantage. For example, when the dominant groups and aristocracies froze existing societal forms and arrangements, and thereby unduly checked societal circulation and the ascent of superior individuals located in the lower ranks, the dominant classes tended in time to become enfeebled, because of the lack of sufficient able recruits; and, upon circumstances becoming propitious for change, they tended to be overthrown or displaced by the superior elements accumulating in the lower ranks.[2]

In the *Trattato* Pareto inquired at length into the rôles of heterogeneity and the interclass movement of individuals, employing, as a key to undulatory and other forms of group behavior, the concept of *residue*. Analysis of non-logical action, in especial of "derivatives" or "non-logico-experimental" theories,[3] revealed, besides factual data, certain variable and contingent elements, i.e. *derivatives*, and a residuary, substantial and essentially constant element or nucleus, the *residue*. The residues, which correspond to "non-logical conduct," are not sentiments or instincts; they "are the manifestation of sentiments and instincts just as the rising of mercury in a thermometer is a manifestation of the rise in temperature."[4] Residues fall into six classes, each containing several

2. M, pp. 398, 425–432; S, I, pp. 28–56, 171–172.

3. For the meaning assigned to "derivative" see T, 847, 855, 862, 868, 1397, and p. 1916; also Livingston's note to 868. On the difference between logico-experimental" and "non-logico-experimental" see 13–14, 16 and pp. 1921–1930; also below, note 9.

4. T, 798–800, 850, 875, and 868, where residue is defined. The precise meaning of the term residue is not explicitly indicated by Pareto: e.g. see 850–851, on relation of residue to instinct; 1845 on relation of heredity and environment to sentiment; 306ff., 850, 1690, on fact that residues have no objective existence. Parsons concludes, after thorough analysis, that in the early and analytical part of the Trattato residue means proposition, while in the applied part, following the classification of residues, they are treated as "concrete tendencies of action." However, neither the residues nor the sentiments which they reflect correspond to the instincts of psychology, Parsons finds. He substitutes the concept "value attitude" for Pareto's term "sentiment," which includes both "value attitude" and a psychological element; the residue then becomes "an expression of the value attitudes underlying it," and therefore in some instances an ideal end. See Parsons, op. cit., especially pp. 215, 218, 224–228, 267–268, 278 n., 296–297.

Derivations serve principally to indicate the forces determining social equilibrium (T, 1397, 1403); they partially correspond to, or manifest, sentiments: directly, "sentiments that correspond to the residues in which they

genera and species: Class I, corresponding to the instinct for combinations, which is (among other things) the progressive element in human society; Class II, the persistence of aggregates (of sentiments), or the conservative force in society; Class III, need of expressing sentiments by external acts; Class IV, residues connected with sociality (e.g. uniformity, self-sacrifice, hierarchy); Class V, integrity of the individual and his appurtenances; Class VI, the sex residue.[5] Of these six classes of residues, I and II are by far the most important in Pareto's scheme, the second conducing to idealistic and related forms of behavior, and the first fostering the pursuit of less idealistic and more materialistic objectives.

While residues vary in intensity with the underlying sentiments to which they correspond,[6] and while they may change in response to altered circumstances or as the result of imitation,[7] the substance of a class of residues, in its bearing upon human conduct, changes slowly and, as a rule, relatively little, modifications in some genera and species tending to compensate modifications in others;[8] only in the longer run may significant changes occur. (It is because the residues are so stable that Pareto is compelled to seek in inter-class circulation an adequate explanation of social oscillation.) Residues are interdependent: directly, in so far as they accentuate or weaken one another; indirectly, in so far as they support or offset one another and so determine social equilibrium.[9]

originate;" indirectly, sentiments to which correspond "residues [e.g. Class III] that serve for purposes of derivation." Derivations reflect man's feeling of need of logic; they clothe with logical or pseudo-logical reasoning the sentiments they manifest. See T, 798–802, 850, 1397, 1403, 1416, 1688, 1690, 1829, 1871, 2081. Derivations are divisible into four classes: assertion; authority; accord with sentiments, interest, etc.; verbal proofs (1419ff.). See below, note 9.

    5. T, Chaps. 6–8, especially 888–889, 991, 1089–1091, 1113, 1207–1208, 1216, 1324, 1396 n.

    6. T, 1740–1743.

    7. T, 2003; on the propagation of derivations see 2004.

    8. T, 1699–1700, 1716, 1718, 1720, 1827–1828, 2552.

    9. T, 1736, 2080, 2088–2089. Whereas residues exert a powerful influence on derivations, the latter, except for their sometime accentuation of underlying sentiments, persist just so long as the associated residues persist; changes in derivations therefore are confined to form. See T, 1397, 1416, 1733, 1735, 1746, 1766–1767, 1770–1772, 1827, 1829, 1832, 1842–1843, 1860, 2146, 2206–2207, 2340, 2343. In "logico-experimental" (T, 13–14) science, when an assertion is refuted, the act of asserting ends, because the derivation

Residues — in especial, the relative proportions of Classes I and II in the several social strata—, social heterogeneity, and inter-class circulation, together with interests[1] and underlying economic conditions, are the most important of the interdependent and inter-acting elements which determine the form and equilibrium of a social system,[2] and which account for the oscillations and longer-run trends in such a system and its parts.[3] So important, in fact, are the proportions in which residues function in the various social strata, "especially the proportions of Class I and Class II residues in the ruling and subject classes, respectively," that one may obtain a "rough outline" of historical and social developments by "centering the main attention on these proportions, other circum-stances of importance being considered in subordination to them."[4]

Social utility depends upon the ratio of I to II in the ruling

(or doctrine) has no strong sentiments (or residues) to support it. In "matters involving sentiment and non-logical conduct," on the contrary, opposition to or refutation of a derivation (or doctrine) will not deprive it of vitality so long as the underlying sentiments remain unweakened. See T, 1397, 1416, 1826, 1834, and pp. 1921ff.; also Parsons, op. cit., pp. 224ff., 296ff. on ends and science in Pareto.

1. Interests, which reflect underlying sentiments, just as do residues, and which fall largely within the economic sphere, spur individuals and groups to acquire material goods and instruments of power. The sentiments under-lying interests resemble the sentiments to which Class V residues correspond; they enjoy freest play when Class I residues are ascendant. The relative im-portance of interests is greater among modern than among ancient peoples. Since, as the economic determinists recognized, interests are of great impor-tance in determining social equilibrium, Pareto considered them apart from the residues. See T, 1207, 2009–2010, 2206, 2286, 2289.

2. Extending his concept of economic system, Pareto described a social system as made up of molecules "harboring residues, derivations, interests, and proclivities" which "perform, subject to numerous ties, logical and non-logical actions." See T, 2079, "Sentiments *depend* on economic conditions, just as economic conditions *depend* on sentiments; . . . there are similar cor-relations among the other elements" which determine the state of equilibrium (T, 2097). On social equilibrium and its determinants see also T, 1690, 2060, 2068, 2070, 2091–2099, 2141, 2146, 2206–2207, 2552–2553.

3. Oscillations are interdependent, as are the elements in which they occur (T, 2329, 2338, 2344ff., 2552ff.).

4. T, p. 1921; also 2413–2415. Hereafter the capitalized Roman numerals will represent the corresponding class of residues. Emphasis upon the ratio of I to II was warranted by their absolute importance, by the relation of I and II to interests, and by the relation between II and genera in other classes (e.g. IV and V). Pareto cautions that mere possession of I and II is not enough; proper use must be made of them. See T, 2415; also 1693–1694 on static and dynamic analysis of residue composition, and "rhythmical move-ment . . . in all social phenomena."

class and in the subject class.[5] In general, when I and II are not in balance in a society as a whole, it will be defective either in innovation and desire to adventure, or in stability and the perseverance and steadfastness necessary to carry out schemes; and these defects will tend to be reflected, and perhaps magnified, in the upper class. For each class there is a "most suitable" ratio: in subordinates and the masses class II, which contributes persistence and firmness of resolve, and so conduces to the proper use of innovations, must predominate; among leaders and the *élite* Class I, which gives rise to innovation, must predominate, with the proviso, however, that Class II must be present in the governing class in sufficient measure to insure social stability.[6]

Back of Pareto's emphasis upon the relative importance of the ratio of I to II in the ruling and the subject classes, respectively, and of inter-class circulation,[7] lies his supposition that the ratio of I to II, especially in the upper class, is very sensitive to "class-circulation," the most dynamic of the determinants of social form and equilibrium. His line of reasoning, often implicit rather than explicit, suggests that residue composition in general, however important in itself, is not the really significant variable. First, since "classes of residues change but slightly or not at all,"[8] at least in short periods, one can attribute inter-society differences in form and performance to inter-society differences in residue composition,[9] but one cannot attribute shorter run oscillations, in so far as they are imputable to residue changes, to shorter run oscillations in residue intensity and composition in general. The variations in residue composition and in the intensity of II in total populations, traced by Pareto, together with his accounts of the effects of these variations, relate to longer run periods.[1] Second, while migration may alter the residue composition of a society, as it did in Rome,

5. Here Pareto is concerned with residue composition; below he is concerned also with the *quality* of the membership of the several classes.

6. T, 2184, 2227, 2254, 2419, 2424, 2427, 2429, 2513; on *élite*, see below.

7. I usually use the term "inter-class" rather than "class" before the term circulation, because the former suggests more firmly than the latter movement from class to class, and from sub-class to sub-class (e.g. from non-governing *élite* to governing *élite*).

8. T, 1720, 2417.

9. As Pareto did: e.g., T, 1720–1721, 2419–2432, 2444, 2476.

1. See his accounts of such variations and their effects in Athens, Rome, and medieval and modern Europe (e.g., T, 2343–2389). He comments several times on long-run changes: I has increased relative to II (2329, 2392); V relative to IV (1716), partly as a result of socialism (1858).

where the population, especially the lower classes, was transformed by the inflow from abroad, particularly from the East, of streams of individuals differing somewhat in residue composition from the Roman and Italic stock, an important part of the total effect may be exercised upon and through the upper class;[2] in fact, it often is impossible "clearly to distinguish the respective share that belongs to proportions of residues and to phenomena of class circulation."[3]

If it be granted that, while residues are important in shaping society, observed dynamics of social change cannot be adequately accounted for in terms of variation in residue composition in general, a more significant source of variation must be sought. Pareto's theory of "class-circulation," together with his conception of the rôle of the *élite*, supplied this significant source of variation. In all societies, power, initiative, and decision-making are largely vested in a small fraction of the population which, because it is so small absolutely and in relation to the remainder of the population, is especially sensitive to the accumulation in, or admission to, its ranks of small increments of population differing in quality or in residue composition from its initial membership. This small fraction, corresponding to the highest class (or classes) and called the *élite*, includes primarily individuals ranking highest in each branch of activity, and secondarily inferior individuals whose qualifications do not suit them for continued membership in the *élite*.[4] The *élite* is made up of two components: the governing *élite*, comprising high ranking governing and military personnel, and the non-governing *élite*, consisting of the remainder; it includes the aristocrats, whether or not they occupy important places in the governing class. The numerically large portion of the population not part

2. T, 1840, 2360, 2546, 2549. The *route* of migration, however, had exercised much less influence upon civilization than Demolins has supposed, Pareto implied (T, 1730).

3. 3. T, 2417.

4. Pareto does not always distinguish sharply between (i) *élite* in the sense of the class of individuals who, in virtue of their qualities, rank high in the several branches of human activity; and (ii) *élite* in the sense of those who, irrespective of their qualities, happen to occupy dominant positions in these several branches. Generally, in his treatment of "class-circulation," he writes as if he conceives of *élite* in sense (i), inasmuch as the strategically situated class (or classes), whose composition is changing, does not include all elements definable as *élite* in sense (i) and therefore is changing for this reason as well as because the ratio of I to II is undergoing modification. See also n. 9 below.

of the *élite* and corresponding to the lower classes constitutes the *non-élite.*[5]

Because of its relative and absolute smallness, the *élite*, governing and non-governing, is numerically sensitive to the influx of small increments of population from the *non-élite.* Assume that of one hundred units of population ninety-four are in the *non-élite*, and three each in the governing and non-governing components of the *élite:* then the movement of one ninety-fourth of the *non-élite* into the *élite* will increase the latter by one-sixth; if the increments are evenly divided between the two components of the *élite*, each will increase by one-sixth; and if the increment moves initially into the non-governing *élite* and later passes over into the governing *élite*, it will increase the latter by one-third. Since the residues, especially I in relation to II, are not evenly distributed, or of equal intensities in the several strata of society,[6] the movement of our hypothetical one unit, assuming it to differ in residue composition from the *élite*, will significantly alter the residue composition — particularly the ratio of I to II — of the *élite*. Accordingly, because the form of a society, together with the manner in which power is used and the purposes to which it is put, depends so largely upon the residue composition of the *élite*, these three conditions change *pari passu* with modifications in the residue composition of the *élite;* whence Pareto considered inter-class circulation to be the major source of societal undulations. Thus a relative increase in I intensifies the innovating capacities of the *élite*, removes restrictions on the play of the interests, and diminishes the capacity of the governing *élite* to preserve social stability and maintain itself in power. A relative increase in II strengthens the conserving and stabilizing powers of the *élite* but, if it proceeds too far, it eventually reduces the innovating capacity of the *élite* to the point where either the society in question or the existing social equilibrium is endangered.[7]

5. T, 2026–2034, 2051–2052.

6. T, 2041–2045. Generally, Class II residues predominate in the several classes (e.g. farmers, workers, poorly educated) making up the *non-élite* or masses. Class I residues usually predominate in the non-governing *élite*, particularly among speculators, plutocrats, and employers; they may or may not predominate in the governing *élite.* See T, 1723–1727, 2187, 2367, 2484.

7. Inter-class circulation and its effects are treated in T, 2025–2059, and in chapters 13–14; see e.g. 2178–2179, 2221, 2254–2259, 2267, 2274–2275, 2429, 2478–2482, 2484. Pareto sketches a lion-fox-lion succession of power holders. After power has been seized by the lions who, because they are rich in II, are

While inter-class circulation issues ultimately from the constant upward pressure of elements in the numerically large lower classes, it varies in intensity and character. As a rule "in the higher stratum of society Class II residues generally lose strength" until they are restored through gradual infiltration or revolutionary upsurges from the masses who are rich in II.[8] When decadent elements are permitted, for any reason, to accumulate in the *élite*, its capacity to fulfill its functions is reduced; and its vulnerability[9] to pressures, which is aggravated also by the accumulation of superior elements in the lower classes, is increased. When wealth can readily be amassed, inter-class circulation is great, and the ascent into the upper classes of bearers of Class I residues, who are adept at amassing and/or creating wealth, is intensified; furthermore, since the ascent of bearers of I tends for a time to multiply wealth-amassing opportunities, class-circulation continues at a high rate until counter-forces, usually associated with the resulting modification of the *élite* and with changing circumstances, develop.[1] War favors the ascent of bearers of II under

equal to the task of seizing power and assuming authority, power tends to pass to the foxes who, in virtue of their richness in I, are skilled at retaining power, once obtained, through cunning and other forms of non-violence. The foxes, however, tend to admit foxes rather than lions to the ruling class. Furthermore, when the foxes are in power, the situation is favorable to the ascent of bearers of I into the non-governing *élite*. In consequence the *élite* becomes ridden with foxes who have neither capacity nor appetite for standing up against the lions accumulating in the *non-élite*. As a result the situation again becomes favorable to seizure of power by the lions, who in turn lose it again to the foxes. See T, 2178–2179, 2227, 2484, and 2480, n. 1 and 4. See Parsons, op. cit., pp. 278ff., for a careful account of Pareto's cycle of social change.

8. E.g., see T, 2048, 2227, 2267.

9. T, 2054–2059. At all times the *élite*, in particular the governing portion, admission into which is more susceptible to the influence of circumstances unrelated to competence than is admission into the non-governing *élite*, contains individuals whose competence does not give them claim to the label of *élite*. See T, 2035–2040, 2052–2055.

1. T, 2221, 2225, 2286–2290, 2300, 2309–2314, 2546–2550, 2608. Protectionism and analogous policies sometimes favored the creation of wealth, because they facilitated the ascent of bearers of Class I residues (T, 2208–2236, 2310–2314). Marie Kolabinska undertook to verify Pareto's "theory of the circulation of the *élite*," as outlined by him in his Manuel and his Systèmes Socialistes; she does not make use of his concept of residue. She concluded, among other things, that in times of trouble men of courage and warlike qualities ascend; that in France wealth came to replace force as the primary determinant of ascension; that the French Revolution originated in the stoppage of class-circulation, which caused superior elements to accumulate in the lower classes while the quality of the upper classes was deteriorating. See La circulation des élites en France, Lausanne, 1912, pp. 27, 41–42, 55, 103, 110–111,

some, but not under all, conditions.[2] Immigration tends to be accompanied by the ascent of bearers of II when it introduces large numbers of bearers of II into the masses and so augments the relative strength of II, always great, in the lower classes. Legal and other obstacles may slow down inter-class circulation,[3] but they do not prevent it entirely; furthermore, the occasional consequent failure on the part of the *élite* to recruit its strength from below may bring about its destruction and a resulting intensification of circulation. Generally, while "class-circulation" varies with circumstances, it is always present; and while it may produce counter-movements and even conditions unfavorable to circulation,[4] it always revives and persists as a major source of societal fluctuation.

IX. CONCLUSION

We shall not attempt an appraisal of Pareto's contributions to population theory, nor an account of the possible origins of his theories, nor a summary of the materials already treated, nor a criticism of his abuse of democratic values and institutions. Instead, we shall indicate important points emphasized or passed over by him.

In many respects Pareto's greatest contribution to population thought is his conception of both the economic system and the social system as systems of interdependent variables, of which the population factor (or factors) is one, and his recognition of the fact that these systems are subject to undulatory movements, which also are interdependent. Given this approach, the unilateral causation theories which still permeate thinking on population fall into their proper places. More important still, it becomes apparent that there exists, not just one population movement, but a number, not all of which he treats, which should make up the body proper of population study.

Because he started with an interdependence approach, and for

120–121. Pareto several times refers to this study in the Trattato. Pareto considered his own theory of social heterogeneity and circulation to be a particular case of the general theory outlined by G. Sensini in his "Teoria dell' equilibrio di composizione delle classi sociali," Rivista italiana di sociologia, XVII, 1913, pp. 556–617. See T, 2025, n. 4.

    2. T, 2223–2226.

    3. T, 2490–2513, 2546–2550.

    4. On social crystallization and the factors which eventually shatter it, see T, 2546–2550, 2607–2610.

other reasons, Pareto was able to introduce greater precision than had prevailed in the controversy precipitated by Malthus' Essay. He was able, through his ever-present distinction between *real* and *virtual* movements, to give satisfactory meaning to Malthus' progressions. Pareto was able, further, through his curve-fittings and rate extrapolations, to discover both the growing divergence between the *real* and the *virtual* movements of population and the limits to population totals, and to make inferences concerning the social and economic effects of this divergence. And he could say, in light of his income-curve analysis, that progress need not be saltatory, as J. S. Mill would have it, to push up the standard of life permanently. Because he looked upon population factors and population determinants as components of a system of interdependent variables, Pareto viewed each of these determinants (e.g. the checks) as reciprocally interconnected with every other determinant and hence limited in its capacity to influence population movements;[5] he could therefore conceive of population problems in terms either of partial or general equilibria. In part because of this approach, Pareto attached less importance to the dynamic effects of the movement of population totals than do contemporary writers.

Pareto's theory of "class-circulation" is important for several reasons.[6] It emphasizes the importance of social, economic, and political circulation and selection, elements which have largely escaped the attention of modern economics. Second, Pareto's theory, while open to exception, serves to focus attention on two facts which commonly tend to be ignored: (*a*) the importance of the strategically situated decision- and rule-making minority in the formation of social form and policy; (*b*) the sensitivity of this minority to numerical and qualitative change, and the consequent susceptibility of a social system to change.[7] The importance of this minority, differently defined, has been made plain recently by

5. Pre-nineteenth-century writers, concerned with balance in nature or with the chain of being, had a primitive grasp of the modern interdependent system of Pareto.

6. Social mobility in its various forms has been treated by many writers. See P. A. Sorokin, Social Mobility, New York, 1927.

7. It is because of the importance of this minority that its age composition is of significance. See my "Some Effects of Changes in the Age Composition of the Labor Force," Southern Economic Journal, VIII, 1941, pp. 157–175.

Toynbee.[8] Pareto, unfortunately, did not integrate his treatment of differential fertility and natural increase with that of the *élite* and class-circulation.

Although Pareto did not discuss optimum population theory as such, he did make two indirect contributions to this matter. First, because he postulated inter-class disharmony, instead of (with Marshall) inter-class harmony, he brought out the fact that a population situation which maximizes a utility or ophelimity index from the standpoint of one social group will not usually maximize it from the standpoint of some other group. He brought out also that what constitutes an optimum population situation turns on the nature of the index for which a maximum is being sought; for maximizing some indices calls for greater populations than maximizing others. His analysis suggests, however, that in proportion as "a single integrated system of ultimate ends" becomes common to the members of a society,[9] and other indices of utility and ophelimity become subordinated thereto, a single overriding or maximum optimum emerges. Second, Pareto's analysis suggests that, even though the population optima which coincide with index maxima differ, if the maxima for a number of indices are in the same general population neighborhood, the combined pull of the elements represented by these indices will restrain in large measure tendencies on the part of the population to move from this neighborhood.

Pareto's emphasis upon the rôle, in human affairs, of individuals and of characteristics embodied in individuals, together with his neglect of the rôle of institutional, physical and spatial configurations, prevented his making as full or accurate application of his income-curve type of analysis as appears possible. He interpreted this curve to reflect the distribution, in societies, of ensembles of traits that have to do with the acquisition and retention of wealth. Likewise, in his discussion of hierarchy and heterogeneity, he thought almost wholly in terms of the distribution of characteristics embodied in individuals; he did not recognize adequately that, since human groupings and associations are by nature ordered, even as is the arrangement of seats in a theatre, the behavior to which collections of individual traits may give rise is necessarily circumscribed by this ordering of associations. In other words,

8. A Study of History, London, V (1939), pp. 20ff.
9. See the reference to Parsons below, p. 133.

Pareto did not recognize clearly that the distribution of income is conditioned, not only by the distribution of human traits, but also by the spatial and hierarchical configurations, inherent in all human groupings and associations, within which human traits seek and give expression.[1] For example, Pareto did not discover that his type of curve constitutes a good index of urbanization and reveals a high degree of stability in urbano-spatial configurations.[2] Had he done so, he might have proceeded to discover the industrio-spatial configurations which underlie the urbano-spatial configurations, and have inferred from these and from the manner in which human associations (e.g. corporations, armies, colleges, churches) must of necessity be organized and structured, that even though men were equal in native abilities, income and power would none the less be unevenly divided. He would have discovered, in short, that income and power distributions are functions of both the distribution of traits and the configurational patterns inherent in organizational and spatial structures. He would then have both modified and strengthened his theories concerning the constants in human affairs; for he would have added to individual behavioral constants the configurational dispositional constants, and he would have altered somewhat his theory of revolution.[3]

In the *Cours* and the *Manuel* Pareto concerned himself primarily with the economic determinants of population growth, and therefore made it appear that population movements were governed predominantly by economic factors. In the *Trattato* Pareto analyzed the non-economic and non-logical elements in human behavior, but he did not integrate his treatment of these elements with that of population growth, either directly by restating his theory of procreative motivation or indirectly by tracing out the effect of class-circulation upon population growth via the medium of wealth accumulation. As Parsons has shown, Pareto distinguished an intermediate means-end sector from the ultimate ends and values sector, and suggested a version of the sociologistic theorem which Parsons restates as follows:

1. There may be a marshal's baton in every private's knapsack, but in the nature of things few can ever be provided with opportunity to use it.
2. See H. W. Singer, "The 'Courbe Des Populations': A Parallel to Pareto's Law," Economic Journal, XLVI, 1936, pp. 254-263; also R. Gibrat, Les inégalités économiques, Paris, 1931, pp. 250ff., and G. K. Zipf, National Unity and Disunity, Bloomington, 1941, Chaps. 1-2.
3. The writer treats these points in a paper planned for publication.

The actions of the members of a society are to a significant degree oriented to a single integrated system of ultimate ends common to these members. More generally the value element in the form both of ultimate ends and of value attitudes is in a significant degree common to the members of the society. This fact is one of the essential conditions of the equilibrium of social systems.[4]

Pareto's earlier account of the determinants of population growth ran largely in terms of the economic, as distinguished from the technological and political, components of the intermediate means-end sector. Had he reëxamined the question of population growth in the *Trattato*, he would have had to consider it, not in terms of a system of interdependent economic variables, but in terms of an all inclusive system of variables, some elements in which permit logical action, while others, because of their unscientific or non-scientific character, cannot give rise to completely logical action. Population movements and growth, if analyzed in terms of the all-inclusive social system, would be found to be less intimately connected with economic movements than Pareto's analysis (Sections I–IV of this paper) in terms of an interdependent economic system has suggested. First human conduct itself would appear to be shaped in a much larger measure by non-economic elements. Second, the economic movements which influence population movements would be found to depend in considerable measure upon non-economic elements. It is to be supposed, therefore, that had Pareto reëxamined the population problem in terms of his sociology, he would have appreciably modified his interpretation of population movements.

In his earlier writings Pareto attributed little influence to efforts to regulate population growth other than those calculated to remove impediments to the production and accumulation of wealth. His sociological analysis suggests, however, that efforts calculated to modify suitably the ultimate end and value system of a people, if successful, would tend to render the social milieu more favorable to population growth; it suggests also that the probable effects of economic stimulants to population growth is relatively limited.

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4. Parsons, op. cit., p. 707.

HICKS ON PERFECT SUBSTITUTES

On pages 16 and 18 of Théorie Mathématique de la Valeur en Régime de Libre Concurrence (Paris, Hermann and Cie, 1937), J. R. Hicks writes:

Quelle peut être l'importance des élasticités de substitution? σ_{rs} est infini et positif, lorsque x_r et x_s sont des *substituts parfaits*. La substitution parfaite peut, en effet, être caractérisée par l'indépendance de u_r/u_s (taux marginal de substitution des biens) à l'égard des quantitiés des biens possédés x_r, x_s, ou tous autres. U dans ce cas s'annulera, mais il n'en sera pas ainsi de U_{rs}. Il s'ensuit que σ_{rs} sera infini et > 0.

Puisqu'il semble probable qu'aucune élasticité de substitution ou qu'aucune élasticité de la demande par rapport au revenu ne soit jamais égale à $- \infty$, nous pouvons être assurés que s'il y a un autre bien qui est un substitut parfait de x_r, $Ex_r/Ep_r = - \infty$.

The notation is: x_r represents quantity of the rth good; the utility index is u and its derivative with respect to x_r is u_r; U is the basic determinant of first and second derivatives of u, namely,

$$U = \begin{vmatrix} 0 & u_1 & u_2 & u_3 & \cdots \\ u_1 & u_{11} & u_{12} & u_{13} & \cdots \\ u_2 & u_{21} & u_{22} & u_{23} & \cdots \\ \cdots & \cdots & \cdots & \cdots & \end{vmatrix}$$

with $u_{rs} = u_{sr}$; U_{rs} is the cofactor of U corresponding to the element u_{rs}; σ_{rs} is defined as

$$\sigma_{rs} = \frac{U_{rs}}{U} \frac{\Sigma_1^n u_r x_r}{x_r x_s};$$

and

$$\frac{Ex_r}{EM} = \frac{M dx_r}{x_r dM}, \quad \frac{Ex_r}{Ep_t} = \frac{p_t dx_r}{x_r dp_t},$$

where M is the total budget $\Sigma p_r x_r$.

Immediately after the third paragraph quoted above, Hicks remarks: "Le lecteur observera peut-être que l'ensemble des considérations qui précèdent se fondent sur les conditions de stabilité . . . ." Perhaps so in the case of most readers, but not in that of any who is really careful; for Hicks has been discussing under perfect substitutes the condition $U = 0$, which is precisely the

condition that his fundamental equations (6.1) for equilibrium, viz.,

$$\Sigma p_r x_r = M, \quad -\mu p_i + u_i = 0, \quad i = 1, 2, \cdots, n,$$

have in general no solution[1] for the quantities $x_1, x_2, \cdots, x_n$ consumed in terms of the prices relative to budget, p_1/M, p_2/M, $\cdots$, p_n/M, and consequently much of what has preceded becomes illusory, including the fundamental equation of the theory of value,

$$\frac{\partial x_s}{\partial p_r} = -x_r \frac{\partial x_s}{\partial M} + \mu \frac{U r_s}{U},$$

from which Hicks obtains his last mentioned results. Indeed, as U occurs in the denominator of the equation, the condition that U may vanish is itself sufficient to suggest that a careful reëxamination of the maximizing problem from the beginning be made before any inferences be drawn relative to the case where $U = 0$.

Reverting back to the first paragraph quoted, what does the statement that u_r/u_s be constant imply with respect to u? The partial differential equation $u_r/u_s = c$ has as its general integral a function u, which contains x_r and x_s only through the linear combination $x_0 = cx_r + x_s$. We shall find it convenient to call the variables which are perfect substitutes x_1 and x_2 and write $u(x_0, x_3, \cdots)$ with $x_0 = cx_1 + x_2$. It will not be necessary to write more than one additional variable x_3. With this form of u, we have

$$u_1 = cu_0, \quad u_2 = u_0, \quad u_{11} = c^2 u_{00}, \quad u_{12} = cu_{00}$$
$$u_{22} = u_{00}, \quad u_{13} = cu_{03}, \quad u_{23} = u_{03},$$

and U vanishes because two rows (and two columns) are proportional. It further follows that

$$U_{13} = U_{23} = U_{33} = 0, \quad U_{11} = U_{12}/c = U_{22}/c^2,$$

1. If we differentiate the $n+1$ functions $M - \Sigma p_r x_r, \ -\mu p_i + u_i$ with respect to $\mu, x_1, \cdots, x_n$ and form their Jacobian we have U/μ^2. When $U \neq 0$ the equations formed by setting these functions equal to zero may be solved for the x's in terms of the ratios $\pi_i = p_i/M$ and the value of μM is $\Sigma u_r x_r$. In case the equations are inconsistent, i.e. when $U = 0$, we should probably maintain the condition $\mu M = \Sigma u_r x_r$ and throw all the inconsistency upon the solution of the n equations

$$F_i = -(\Sigma x_r u_r) \frac{p_i}{M} + \mu_i = 0 \quad \text{with} \quad \frac{\partial(F_1, \cdots, F_n)}{\partial(x_1, \cdots, x_n)} = \frac{U}{\mu M}$$

as their Jacobian; also we may write

$$\pi_i = \frac{p_i}{M} = \frac{u_i}{\Sigma u_r x_r} \quad \text{with} \quad \frac{\partial(\pi_1, \cdots, \pi_n)}{\partial(x_1, \cdots, x_n)} = \frac{U}{(\mu M)^{n+1}}$$

and these last three will not vanish, unless there is some anomaly in the behavior of x_0 and x_3. The elasticity of substitution σ_{11}, σ_{12} and σ_{22} are formally infinite, and elasticities σ_{13}, σ_{23} and σ_{33} are formally indeterminate. But the equilibrium equations $-\mu p_1 + cu_0 = 0$ and $-\mu p_2 + u_0 = 0$ are inconsistent and have no solution (unless it happens that $p_1/p_2 = c$, whereupon the solution becomes indeterminate).

The functional form $u(cx_1 + x_2, x_3)$ for the utility index shows that for x_3 constant, the indifference curves are parallel straight lines $cx_1 + x_2 = $const., and the indifference surface is therefore cylindrical. If we first disregard x_3 and discuss the solution of the problem for two perfect substitutes x_1 and x_2, we may see from the simplest of figures that for the case $c < p_1/p_2$ we must take that indifference line where $M = p_1 x_1 + p_2 x_2$ cuts the x_2 axis, giving $x_1 = 0$ and $x_2 = Mp_2$ as that of maximum utility; but for the case $c > p_1/p_2$ we must take the indifference line where the budget line cuts the x_1 axis, giving $x_2 = 0$ and $x_1 = M/p_1$ as the solution. By direct differentiation we find for $c > p_1/p_2$

$$\frac{\partial x_1}{\partial M} = \frac{1}{p_1}, \quad \frac{\partial x_2}{\partial M} = 0, \quad \frac{\partial x_1}{\partial p_1} = -\frac{M}{p_1{}^2}, \quad \frac{\partial x_1}{\partial p_2} = 0,$$

$$\frac{\partial x_2}{\partial p_1} = 0, \quad \frac{\partial x_2}{\partial p_2} = 0, \quad \frac{Ex_1}{Ep_1} = -1, \quad \frac{x_2}{p_2} = \frac{0}{0}.$$

It will be noticed that Ex_r/Ep_r is not $-\infty$, as stated by Hicks in the second paragraph quoted, but -1 or indeterminate.[2] There are similar results when $c < p_1/p_2$.

2. It might be well to work out the case $u = \log (cx_1 + x_2)$ in detail. If we take $\mu M = \Sigma u_r x_r$ we find $\mu M = 1$. For $c > p_1/p_2$ the fundamental equal of the theory of value, if it held, as it does not, would give for the possibilities ($r = 1, 2$; $s = 1, 2$) the result $U_{11} = U_{12} = U_{22} = 0$, which are incorrect, instead of $U_{11} = -p_1{}^2/(c^2 M^2)$, $U_{12} = p_1{}^2(cM^2)$, $U_{22} = -p_1{}^2/M^2$. To deal with 0 as a divisor or with ∞ in any capacity lays one dangerously open to error. Strictly, it is necessary to go back to the original limiting processes which led to the 0 or ∞, and it may be that one becomes involved in double limits which are different according to the order in which the limit is approached. With nothing more complicated than a quadratic equation and some rather tedious elementary algebra, one could study in detail the case $u = \log(x_1 + x_2) + \epsilon \log x_1 + \eta \log x_2$, where ϵ and η are small quantities approaching 0 as a limit, so that u approaches $\log(x_1 + x_2)$ and the slightly curved indifference lines straighten out. It should be noted that no matter how small ϵ and η are, the indifference curves have the axes $x_1 = 0$ and $x_2 = 0$ as asymptotes, so that the limit of the

If, next, we consider x_3 to be present, the plane $M = p_1x_1 + p_2x_2 + p_3x_3$ may be tangent to some cylindrical surface $u = \text{const.}$ along an element, and x_1, x_2 will then be indeterminate; but for most values of M and p_i the plane will not be tangent to any cylinder $u = \text{const.}$ If we should suppose u maximized for a given M for some values x_{10}, x_{20}, x_{30}, where neither x_{10} nor x_{20} was zero, and considered the other points of the cylindrical element, $x_{10} + t$, $x_{20} - ct$, x_{30}, where t is a parameter, we should have the same values of x_0 and x_3 and of u, but the cost M would be

$$M = p_1x_{10} + p_2x_{20} + p_3x_{30} + (p_1 - cp_2)t = M_0 + (p_1 - cp_2)t.$$

If $c < p_1/p_2$, we have M less for t negative than for $t = 0$, i.e. we could get the same satisfaction u for less expense; and if $c > p_1/p_2$, we have M less for t positive. As such conditions mean that u has not been maximized, as supposed, subject to a given M, the hypothesis that it could be maximized for values x_{10}, x_{20}, neither of which was zero, must have been false, and we are thrown back on the conclusion that for $c < p_1/p_2$ we have $x_1 = 0$, but for $c > p_1/p_2$ we have $x_2 = 0$, as in the case when no other variable was present.[3] This would be quite evident geometrically from a three dimensional diagram, if such a diagram were easy to draw or imagine with sufficient clarity.

Hicks stated that perfect substitutes were characterized by the constancy of u_r/u_s. There is no use to dispute definitions which are not self-contradictory. Under that definition U does vanish, but it is not true conversely that when U vanishes we have perfect substitutes in the sense that u_r/u_s is constant. It might be well to examine the condition $U = 0$. If we wish to speak in geometric terms about the characteristics of the indifference surfaces, it is well to transform U into an expression in the derivatives of one variable, say x_1, with respect to the other variables $x_2, \cdots, x_n$ for $u = \text{const.}$ We have

indifference curve is a segment of a straight line and infinite segments of the axes, whereas the indifference curve at the limit is merely the segment of the line!

3. Throughout I have assumed, as is usual, that one cannot consume a negative quantity of a good; furthermore, as the indifference curves are linear, I have assumed that they run to the axes where one variable vanishes; the case where only pieces of the indifference curves are straight and the pieces terminate other than on the axes is readily handled, because the argument then shows that the equilibrium must be at or beyond one end or the other of the rectilinear portion of the indifference curves.

$$U = (-1)^n u_1^{n+1} \begin{vmatrix} \dfrac{\partial^2 x_1}{\partial x_2{}^2} & \dfrac{\partial^2 x_1}{\partial x_2 \partial x_3} & \dfrac{\partial^2 x_1}{\partial x_2 \partial x_3} \\[2mm] \dfrac{\partial^2 x_1}{\partial x_2 \partial x_3} & \cdots & \cdots & \cdots \\[2mm] \cdots & \cdots & \cdots & \cdots \\[2mm] \dfrac{\partial^2}{\partial x_2 \partial x_n} & \cdots & \cdots & \dfrac{\partial^2 x_1}{\partial x_n{}^2} \end{vmatrix}$$

The condition $U = 0$ therefore means that the indifference surfaces have a degenerate indicatrix. In the particular case of two variables, we have

$$\frac{d^2 x_1}{dx_2{}^2} = 0 \text{ and } x_1 = \phi(u)x_2 + \psi(u).$$

The indifference lines are straight lines, but not necessarily parallel as in the case $u(cx_1 + x_2)$. However, there is only a single infinity of these lines, whereas there is a double infinity of lines $M = p_1 x_1 + p_2 x_2$. It is therefore geometrically obvious that the problem of maximizing u must be solved by setting $x_1 = 0$ or $x_2 = 0$, except in the unusual case where M, p_1, p_2 are such as to make the budget equation coincide with some indifference line.

In the case of a three-good market, the indifference surfaces are developable surfaces, i.e. ruled surfaces with the tangent planes tangent to the surface along a ruling instead of at one point. There will be only ∞^1 tangent planes for each surface instead of ∞^2 and only ∞^2 tangent planes to all the indifference surfaces, instead of ∞^3. As the budget equation $M = p_1 x_1 + p_2 x_2 + p_3 x_3$ has three degrees of freedom, it is clear that generally it cannot be tangent to any indifference surface and that the solution of the problem of maximization has to be sought "on the boundary." Indeed, the argument by reductio ad absurdum given above may be applied almost without change. Let it be assumed that the problem were solved as a point x_{10}, x_{20}, x_{30}, with none of the variables vanishing. The value of u would be the same along the ruling through this point. The points of the ruling may be represented by

$$x_{10} + c_1 t, \quad x_{20} + c_2 t, \quad x_{30} + c_3 t$$

where t is a parameter. The cost is

$$M = p_1 x_{10} + p_2 x_{20} + p_3 x_{30} + t(c_1 p_1 + c_2 p_2 + c_3 p_3).$$

Now, if it happens that the market prices p_i are such that $\Sigma c_i p_i = 0$,

any point of the ruling will represent a solution and the quantities x are indeterminate. But if the prices are such that $\Sigma c_i p_i > 0$, we can save expense by taking t negative; whereas if $\Sigma c_i p_i < 0$, we may save by taking t positive. Hence no interior point can be a maximum and one of the three values x_{10}, x_{20}, x_{30} must be zero.

If we should consider that $U = 0$ was the condition that the n goods constitute a set with perfect substitution, what we should mean would be that one of the goods would not be consumed;[4] there would be no relationship of one particular pair of goods. From some points of view this would seem a situation more appropriate to the Slutsky-Hicks approach than that implied by the characterization of Hicks.

Having thus seen that the condition $U = 0$ is one which forces us to seek a solution outside the region for which $U = 0$, or on its boundary, we turn to the matter of the determination of the values of the elasticities of substitution. We may seek to evaluate them by the formula

$$\sigma_{rs} = \frac{M}{x_r x_s} \left(\frac{\partial x_s}{\partial p_r} + x_r \frac{\partial x_s}{\partial M} \right)$$

provided we have values for $\partial x_s / \partial p_r$ and $\partial x_s / \partial M$; for this formula is surely right when $U \neq 0$. If this were applied to any case in which neither x_r nor x_s was zero, i.e. to one where we were not forced on to the boundary so far as these two values of x were concerned, we could not have σ_{rs} infinite, unless $\partial x_s / \partial p_r$ or $\partial x_s / \partial M$ were infite. In the case we worked out in the text for two goods we should find $\sigma_{11} = 0$ with σ_{12} and σ_{22} indeterminate. If we used the two identical relations

$$x_1 \sigma_{11} + x_2 \sigma_{12} = 0, \quad x_1 \sigma_{12} + x_2 \sigma_{22} = 0$$

which hold when $U \neq 0$, and noted that $\sigma_{11} = 0$, we should find again that σ_{12} and σ_{22} were indeterminate. In either case there is no suggestion that σ_{12} is infinite. And why should there be; if $U = 0$ forces us out of the region where $U = 0$, it would seem to be only natural that U should not be zero in the position of maximum.[5]

4. This is provided that the ruled portions of the indifference surfaces run to the coördinate planes. Surfaces which contain limited portions of developable surfaces are well known in the thermodynamic study of the system water — vapor — ice.

5. The illustrative example of footnote 2 would be instructive in this connection. The value of U is near zero in the nearly straight part of the indifference curve, but the equilibrium position lies beyond in the sharply curving part that resembles an angle of 135° between the rectilinear portion

There is a possible case of infinity in the rare situation in which the market prices p_i happen to satisfy the particular linear relationship which makes the solution indeterminate, for then x may change with no change of price and $\partial x/\partial p$ might be said to be infinite; but otherwise it looks as though σ_{rs} for perfect substitutes were unlikely to be infinite.

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and one of the coördinate axes. The value of U is $u_1{}^3 d^2x_1/dx_2{}^2$ or $u_2{}^3 d^2x_2/dx_1{}^2$ as the second derivatives are extremely large at some point between the two practically straight parts of the curve, U may well become infinite instead of 0 at the point of equilibrium as ϵ and η go off toward zero in some manner or other.

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THE
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ECONOMIC IMPLICATIONS OF AIRCRAFT[1]

SUMMARY

I. Impact of transport technology upon the United States economy, 145. — II. Costs of air transport, 149. — The rôle of aircraft in the future transport web, 153. — Private aircraft, 156. — Cargo movement, 157. — III. Implications of the foregoing: urban-metropolitan patterns, 161; investment outlets, 163; trade channels and commercial centers, 164; capital exports, 166; government aid, 166. — Appendix: the case of Brazil, 168.

Economic evolution stems from man-devised technology acting dynamically upon relatively passive geographic elements. In this paper we shall be concerned with one phase of this process: the modifications in geographic resistances to commodity and population movement which tend to result from the development of a revolutionary transport technology; and the implications of this technology for commercial-industrial structure, population distribution, and general economic prosperity.

I

To provide the necessary historical perspective we shall begin with a brief review of the impact of past transport innovations upon the United States economy, and touch upon certain relevant theoretical considerations.

During somewhat more than a century prior to the early 1930's, four major transport changes had been introduced on a considerable scale into the American economy: the canal, the railroad, the street and electric railway (trolley, subway, elevated) and the automobile.[2] The effects of these innovations can be

1. The writers are indebted to Professors Alvin H. Hansen, Harvard University, and John U. Nef, University of Chicago, for their fruitful criticisms. Much of the material has been gathered under a fellowship granted by the Social Science Research Council.
2. The material, statistical and theoretical, is taken from two articles by W. Isard: "Transport Development and Building Cycles," this JOURNAL,

broadly classified into two categories: those incident to reduction of the cost of commodity movement, with which the canal and railroad were chiefly associated; and those which resulted from increased population mobility, in which the street and electric railway and the automobile played the principal rôle. In general, reduction in cost of commodity movement increases geographic specialization, permits mass-production economies, and by differentiating between superior and inferior commercial sites and sources of material and labor, re-allocates market areas and productive activity in favor of the most efficient enterprises and strategic locales. Concentration and expansion of production ensue,[3] and we observe the emergence of huge industrial and commercial centers and the intensive exploitation of rich mineral deposits attributable in large part to construction of comprehensive canal and rail networks.

More specifically, there were four vast outbursts of canal and railroad construction in the United States during the nineteenth century,[4] each drastically lessening the cost resistance of geographic elements; and within the limitations of the available data we note, in one-to-one correspondence with each outburst, periods of intense activity in anthracite and bituminous coal production, pig iron production and urban construction, followed by periods of mild activity or depression in these fields. The causal flow comes in major part from the transport factor: each outburst of canal and railroad construction, through intensive and extensive enlargement of market areas and economic spheres, stimulated marked increases in industrial and mining activity (as manifest in the data on pig

November, 1942; "A Neglected Cycle: The Transport-Building Cycle," Review of Economic Statistics, November, 1942.

3. For fuller exposition of these forces and the scope of their play refer to E. M. Hoover, Jr., Location Theory and the Shoe and Leather Industries (Cambridge, 1937); and W. H. Dean, Jr., The Theory of the Geographical Location of Economic Activities, unpublished doctoral dissertation, Harvard University Library, selections published under same title, Edward Brothers, Ann Arbor, Mich., 1938.

4. The first, extending from the mid-1820's to the early 'forties and reaching a peak in the early 'thirties, consisted of canal construction; the second, from the late 'forties to the early 'sixties, with a peak in the mid-'fifties, almost wholly of railroad construction with some canal projects in the early years; the third, from the close of the Civil War to the mid-'seventies, of railroad construction, with a peak in the early 'seventies; the fourth, from the late 'seventies to the early 'nineties, double-peaked in the early and late 'eighties, of railroad construction (with an incipient stage of street and electric railway construction at the close).

iron and coal production), and through consequent concentration of these activities at strategic sites, stimulated vigorous urban development (as indicated by building statistics).[5] Thus the transport factor, by affording enormous outlets for investment in its own facilities and by provoking perhaps still greater investment in those other major sectors of the American economy, was the backbone of each of the four extended periods of prosperity during the last three-quarters of the nineteenth century.

Increased population mobility achieved through the street and electric railway and the automobile permits (1) dispersion of urban population agglomerations with consequent development of suburban population and outlying territories, and (2) site selection with respect to consumer functions (an effect to be discussed in Section III). Specifically, prior to the early 1930's, the street and electric railway and the automobile were injected into the American economy in outbursts of activity,[6] and in one-to-one correspondence with these changes we observe sharp increases in non-farm residential construction. Each of these two transport changes, in turn, precipitated an intense centrifugal movement of congested urban populations, as reflected in the index of residential building,[7] and in this manner laid the basis for the formation of huge metropolitan regions. Once again the transport factor, by providing

5. Data covering basic industrial and mineral production do not extend far back into the nineteenth century, save for the series on anthracite and bituminous coal and pig iron, which series start in the 'twenties, 'forties and 'fifties, respectively. Lacking more adequate data, we view the movement of these primary series as roughly representative of industrial and mining activity. The series on building activity extends back to 1830, and for the nineteenth century depicts fairly well growth and concentration of industry, commerce, and population at primary urban centers.

The reader is again referred to the articles by W. Isard, loc. cit., wherein are presented graphs of the series cited and a much more elaborate statistical and theoretical analysis of the relations stressed above, as well as those which follow.

6. The outbursts are timed from the late 'nineties to the close of the first decade of the twentieth century and from the mid and late 'teens to the close of the 'twenties, with peaks in the middle of the first decade and early 'twenties, respectively.

7. Residential building, save that at the very cores of urban centers, was largely confined to suburban and peripheral areas in these years. For a partial analysis by decades of urban population movements for several primary cities during the twentieth century refer to R. D. McKenzie, The Metropolitan Community (New York, 1933), Chap. XIII. Also see Population of the City of New York 1890-1930, compiled and edited by Walter Laidlaw (New York, 1932).

substantial investment opportunities in its own field and in the host of investment outlets associated with the peripheral development of cities and the emergence of metropolitan areas, was of crucial significance for the two extended periods of prosperity experienced during the period from the late 'nineties to the early 'thirties.

Two further considerations deserve comment. First, geographic characteristics as impediments to commodity and population movement are of varying import for each transport technology. When one mode of transport supplants another, the relative emphasis upon the various geographic elements may be altered. New elements may appear as major obstacles to movement, which when translated into economic terms may effect a radical change in the strategy of traffic flow, induce relocation and shift of industry and population, and modify the hierarchical order of trade routes and commercial sites. This did occur in the United States during the period under examination, when the canal technique, stressing gradients and limited water supply as obstacles, strongly differentiated between traffic arteries from the Eastern seaboard to the interior beyond the Appalachians, and when the railroad, by further diminishing cost and time resistances of surface configuration, reoriented cross-country movement from circuitous waterways to much more direct East-West routes.[8]

Second, distinction should be drawn between intensive and extensive transport development of regions by technological developments affecting the cost of commodity movement. In general, intensive development perpetuates the tendencies for concentration and growth of industry and commerce at strategic sites within a given evolved region. On the other hand, the extension of transport facilities to regions formerly inaccessible or to regions which for all practical purposes have been isolated economically because of prohibitive transport costs, not only may have effects similar to intensive development through tapping unexploited markets, but, more important, may permit utilization of new resources, institute drastic revaluation of old natural resources, and compel reconsideration of industrial and commercial locations, thereby often effecting wholesale shifts of such activities. The canal and railroad had their

8. The reader unfamiliar with the details of these occurrences is referred to W. H. Dean, Jr., (Selections), pp. 42–46, and to standard texts on United States economic history.

greatest impact upon the American economy, not so much through the substitution of the canal for the turnpike or the railroad for waterways in territory already fairly well settled, but through penetration of the canal into the Appalachian interior, through access to the anthracite coal fields afforded by the canal, through the incursions of the railroad into the frontier and sparsely developed regions of the Mississippi valley and the Far West. The vast industrial, commercial, and urban adaptations entailed by such thrusts as these have been the mainstays of the four extended periods of buoyant prosperity in the United States during the last three-quarters of the nineteenth century.[9]

II

Postponing application of these generalizations until Section III, let us next examine the relevant cost aspects of air transport and the rôle which aircraft may be expected to assume in the transport systems of the future. A multitude of uncertainties are obviously involved in such an analysis: uncertainties concerning the nature and the rate of technological progress in the aeronautical sciences,[1] in the sciences of competitive transport mechanisms, and in all other fields; uncertainties inherent in future moral, social, political and other extra-economic forces, national and international. We shall rely upon the reader's initiative to supply necessary qualifications to the analysis.

E. P. Warner has made a rough calculation of operating costs for different aircraft representative of technical progress at different times, which throw much light on the effect of technological advance upon air transport costs. The data are presented in the

9. See Norman J. Silberling, The Dynamics of Business (New York, 1943), Chap. 10, for an equally strong emphasis, though with a different causal-flow analysis, upon transport innovation as a potent, dynamic stimulant to economic progress and prosperity.

1. Technical achievement in the modern era is essentially an orderly, cumulative process, continuously expanding the fund of knowledge; it thereby lends itself to rough prediction. It is in this sense we view progress in aircraft technology, progress in making explicit what is implicit in the concept of air transport, and our forecasts for the long run are evolved accordingly, though we recognize that translation of technical knowledge into practical achievement and introduction of innovations and refinements into economic life are jerky and irregular. For further discussion of this point see A. P. Usher, A History of Mechanical Inventions (New York, London, 1929), Chaps. I and II.

COSTS OF AIR TRANSPORT

Aircraft	Payload lbs.	Direct Cost in Cents, Capacity Payload		Total Cost (direct and indirect) in Cents, Capacity Payload	
		Per Mile	Per Ton-Mile	Per Mile	Per Ton-Mile
DH (1920)...............	600	26.4	88.1	48.3	161.0
Boeing 40 (mid-'twenties)........	1,200	20.2	33.7	43.6	72.7
Ford (1925)............	3,200	34.1	21.3	69.3	43.3
Lockheed Vega (1929)........	1,350	15.1	22.4	38.1	56.5
Boeing 247 (1933).........	2,800	21.1	15.1	51.9	37.2
Douglas DC-3 (1936)........	5,000	26.7	10.7	68.6	27.4
Postwar Aircraft (two to four years after war)					
a. Passenger........	12,000	...	...	102*	17*
b. Cargo..........	16,000*	...	...	76*	9.5*

* See note 2, p. 151.

accompanying table.[2] Tremendous cost reductions have already been achieved. Although costs per mile do not fall, ton-mile costs drop sharply, reflecting the increasing size and payload of the later models. Direct cost (comprising only the five major items) and total cost per ton-mile of the Douglas DC-3 (1936) are less than one-eighth and slightly more than one-sixth, respectively, of the corresponding figures for the DH mail plane (1920).[3]

2. The data are assembled by E. P. Warner in two lectures: for prewar aircraft, "Technical Development and its Effect on Air Transportation," Norwich University lecture (York, Pa., 1938); for postwar aircraft, "Postwar Transport Aircraft," the Thirty-First Wilbur Wright Memorial Lecture, published in Aeronautical Engineering Review, Vol. II, No. 10 (October, 1943), pp. 7-59.

"To eliminate all differences except those absolutely inherent in the characteristics of the equipment itself," and thus make comparisons of prewar aircraft fair, Dr. Warner projects the planes of the past (DH, Boeing 40, and Ford) into conditions of the present (1938) and accordingly considers cost of operation for each (op. cit., pp. 33-34). Total cost is roughly arrived at by summing the five major items of direct cost, namely, fuel cost, pilot salaries, maintenance cost, depreciation and insurance and crash reserve (the sums are recorded in the table), multiplying this result by 1.2, and adding fourteen cents a mile, plus nine cents a ton-mile (of payload), thereby including indirect costs and minor direct costs. In general, total cost data "are not far from the records of experience for the several airplanes included. For the earlier machines on the list they run somewhat lower than appears to have been the common experience at the time when they were in full service"; this could be anticipated from the elimination of differences other than in equipment (op. cit., pp. 41-42).

Dr. Warner conceives the first postwar generation of transport aircraft (to which the data of the table relate) as comprising those models reaching the market during the period from the end of the second to the end of the fourth years after the war. The data represent minimum cost conditions (including a profit of 10 per cent of operating expenses) for aircraft constructed on the basis of dimensions and design ratios consistent with maximum economy in the present state of the art, in addition to embodying a substantial number of possible improvements whose realization will effect an aggregate saving of 15 per cent in operating cost. For the cargo aircraft the data embrace cost of traffic solicitation and of handling and loading freight, but exclude cost of pickup from shipper and delivery to final consignee. Dr. Warner computed cost data on the assumption of a 65-70 per cent load factor. For comparative purposes the writers converted the data to a capacity payload base by simple operations. The converted data are identified by asterisks, and undoubtedly are within a few per cent of what Dr. Warner might have calculated, had he had a similar purpose. Obviously, the crudeness of all the data, the somewhat arbitrary and perhaps changed base of computation, and the uncertainty of prognostication warrant only rough comparisons.

3. For further evidence of the high cost of air transport operations during the early and mid-'twenties, refer among other sources to Civil Aviation, A Report by the Joint Committee on Civil Aviation of the United States Depart-

Tremendous, too, are the cost reductions envisaged for the future. From Dr. Warner's authoritative analysis are computed the minimum practicable cost data (inclusive of a profit charge of ten per cent of operating expense) of 9.5 cents and seventeen cents per ton-mile upon a capacity payload basis for first generation postwar cargo and passenger aircraft, respectively.[4] Further substantial

ment of Commerce and the American Engineering Council (New York, 1926); and Archibald Black, Transport Aviation (New York, Chicago, 1926).

The Lockheed Vega, Boeing 247, and Douglas DC–3 are aircraft constructed primarily for passenger carriage, and Warner's data are computed accordingly. However, W. M. Sheehan ("Airplanes for Air Freight," Journal of Air Law and Commerce, Vol. XI, No. 2, July, 1940) has developed for the Boeing and Douglas craft converted to cargo movement cost data which yield respectively 15.8 cents and 12.4 cents per ton-mile, capacity payload; and A. D. Lewis, (Some Economic Aspects of the Air Express Business, published by the author, Austin, Texas, 1941) has arrived at the cost figure of 12.28 cents per ton-mile for a cargo-converted Douglas DC–3, capacity payload. Though these cost data appear to have been constructed on a somewhat optimistic basis, very rough comparison with Warner's data on postwar cargo aircraft is permissible.

For an authoritative, but hypothetical, British cost estimate of efficient air transport operations during the late 'thirties, see S. J. Noel-Brown, Economics of Air Transport (London, 1937) Chap. VIII.

A partial supplement to Warner's quasi-hypothetical material is the analysis by J. Parker van Zandt (Transportation and National Policy, U. S. National Resources Planning Board, Washington D. C., 1942, Part II, Section I: Air Transport). The average gross operating expense per ton-mile capacity payload of the sixteen domestic air carriers has decreased steadily from approximately 50 cents in fiscal year 1935 to less than 35 cents in fiscal year 1940, and for Eastern Air Lines, one of the lowest-cost operators, has declined over the same period from about 45 cents to about 28 cents (op. cit., p. 344). Owing to incompleteness or inconsistency in reporting to the Civil Aeronautics Authority, these data are considered within 10 per cent correct. The discrepancies between Warner's computations and actual expenses of the domestic air carriers are in large part attributable to the inevitable lag in adoption of most advanced equipment for airline operation, to the inefficiencies of the various airlines, and to their provision of other than minimum-cost service. Of interest, too, though for obvious reasons not strictly comparable, are the estimates of 39 cents and 43 cents per capacity ton-mile achieved by the low-cost operators SABENA (Belgian) and KLM (Dutch), respectively, in European operations in 1937. (O. Lissitzyn, International Air Transport and National Policy, New York, 1942, p. 208.)

4. Other sources corroborate Warner's cost prognosis for first-generation postwar aircraft operation. Direct and total operation costs of the 44-passenger version of the Curtiss Wright Model CW-20-E are estimated at 10.3 cents and 18.5 cents capacity ton-mile, respectively. (Curtiss Wright Corporation, Airplane Division, Buffalo, N. Y., Transport Contracts Department, Operating Cost 44-Passenger Version of Model CW-20-E, Report No. TCO-13A, February 20, 1943.) Direct and total operation costs of the Curtiss-Wright commercial cargo plane, whose scheduled peace-time debut was interrupted by the war, according to estimates, hover about six cents and 10–11 cents per capacity

diminutions of cost are to be anticipated from war and postwar technological advance. Dr. Warner included in the design and performance of his postwar aircraft improvements effecting only one-third of possible aggregate savings in operation cost realizable in the immediate postwar period. And on the horizon are a number of outstanding innovations — the flying wind, jet propulsion, commercial glider trains, and others — any one of which, in conjunction with progress in design, fuels, and materials, may bring about a marked reduction in the cost of air transport.[5] We need not discuss this point further.

With this cost framework in mind, we may now discuss the rôle of aircraft in the future transport web. Obviously, this rôle will vary for each country and under different circumstances. We shall confine ourselves to two broad categories of circumstances: those representative of highly industrialized-commercialized areas, and those of backward, undeveloped areas, as typified by the United States and large parts of Latin America, respectively.

Aircraft unquestionably will dominate the sphere of first-class commercial passenger traffic, other than short-distance. The speed element alone would be sufficient to insure a rapidly expanding patronage (assuming increasing safety, regularity of performance and thus public acceptance[6]), but in addition a cumulatively

ton-mile, respectively. (Roosevelt der Tatevasion, "Flight Takes to the Air," The Iron Age, February 26, 1942, pp. 47–53. Mr. Tatevasion cites from a report, Description and Estimated Performance, Curtiss-Wright Corporation, St. Louis Airplane Division). J. Parker van Zandt asserts that projection of the trend of cost during the period 1935–40 suggests gross operating expenses for domestic passenger aircraft of less than 20 cents per capacity ton-mile within a few years; and he visualizes for the future cargo aircraft running at total cost of 7–8.5 cents per capacity ton-mile, exclusive of pickup and delivery expenditures (op. cit., p. 344).

On the other hand, see a more conservative report by B. A. McDonald and J. L. Drew, Air Transportation in the Immediate Postwar Period, Section IV, Curtiss-Wright Corporation, 1944.

5. For instance, Warner states that, under certain restricting conditions, if stability and control difficulties can be overcome in a true flying wing, this aircraft might have unit costs 20 per cent lower than those of his first-generation postwar passenger aircraft (Wilbur Wright lecture, p. 37).

However, one should not anticipate lowered costs through enterprise expansion. Careful analysis of airline operating statistics indicates that, contrary to railway experience, enterprises of medium size cannot expect to realize decreasing costs with expansion. Rather, constant costs are encountered "at a scale of operation not very large." John B. Crane, "The Economics of Air Transportation," Harvard Business Review, Summer Number, 1944.

6. Warner voices the justifiable expectation that records of no more than 1.0 fatality per 100,000,000 passenger miles on a long-term average, and of

more favorable competitive cost position for aircraft can be antici-
pated. A 65-70 per cent load factor applied to Warner's first-
generation postwar passenger aircraft (which aircraft should
characterize a large segment of domestic operations within the
first postwar decade) yields an approximate passenger fare of 2.5
cents per mile,[7] a charge below prewar basic Pullman rates[8] and
indicative of the keen competition which aircraft can offer to all
first-class surface transport service on the cost basis alone.[9]

97 per cent regularity in winter and 99 per cent in summer, will be attained
shortly in the United States. For fuller discussion, see Wilbur Wright lecture,
pp. 55–59; also John H. Frederick, Commercial Air Transportation (Chicago,
1942), pp. 277–283.

7. A passenger and baggage are assumed to weigh 200 pounds. Warner's
postwar passenger aircraft is designed to carry 40 passengers and two tons of
mail and cargo. The payload factor applied is a maximum obtainable without
impinging upon the service offered to the public. (Wilbur Wright lecture,
pp. 33, 34, 37.)

8. In recent prewar years the basic Pullman charge was quite uniformly
reduced to three cents per mile. Through sliding-scale and round-trip arrange-
ments, the effective rate hovered between 2.4 cents and three cents per mile,
though in the West and South a two-cent rate on 15-day round trip was estab-
lished. (Kent T. Healy, The Economics of Transportation in America, New
York, 1940, pp. 272–279). A more fundamental comparison of relative costs
of travel by Pullman and aircraft involves consideration of value of time con-
sumed, and of food, room and other supplementary expenses. Here the advan-
tage of aircraft becomes decisive (see Frederick, op. cit., pp. 305–313).

The encroachment of aircraft upon Pullman traffic continues, despite
the fact that air rates have consistently exceeded Pullman rates by a consider-
able differential; however, this encroachment is difficult to measure. (For the
course of passenger air rates, 1926–1940, refer to Claude Puffer, Air Transpor-
tation, Philadelphia, 1941, p. 642). We know that a substantial fraction of
business, political, and pleasure air traffic has been newly-stimulated. Never-
theless, of interest is Van Zandt's statement that "in the last ten years, to the
end of 1940, revenue passenger-miles flown on scheduled domestic airlines
have increased from less than one per cent to approximately 12 per cent of
Pullman passenger miles" (op. cit., p. 351). For statistics on progress of pre-
war domestic passenger service, consult Civil Aeronautics Authority, Second
Annual Report, 1940 (Washington D. C., 1941). Van Zandt conservatively
predicts within the next decade or two commercial domestic air travel of six
billion revenue passenger-miles, approximately a sevenfold increase over fiscal
year 1940 (op. cit., p. 354). See Warner (Wilbur Wright lecture, pp. 11–13) for
an estimate of roughly similar proportions.

9. Aircraft can be expected to usurp a large proportion of first and
cabin class ocean travel. On intercontinental routes the time differential of
air over water transport will be of still greater magnitude than air over rail
travel, though simultaneously a marked cost differential of steamship rates
over air rates will exist. (For a discussion of factors causing intercontinental
air transport operations to be more costly than domestic, refer to Lissitzyn,
op. cit., pp. 203–209.) As an example, the cost differential between aircraft
and steamship fares from New York to Buenos Aires in 1940 was $291.75,

Short-distance passenger traffic in advanced industrialized regions may partly fall to local and feeder airlines, especially to the latter when trunk-line air connections are involved. But here the speed advantage of air travel is not so pronounced, and here, as well as in the field of urban-metropolitan transit, buses and railways should retain dominance.[1] These forms of transportation should also retain dominance in the lower-class commercial passenger traffic of these regions, though aircraft stripped of luxurious and unessential equipment will doubtless offer some competition. Much obviously depends upon the progressiveness of railway and bus management.[2]

For backward and underdeveloped regions lacking adequate

whereas the time differential was 14¼ days. (Additional cases and fuller discussion are presented by William A. M. Burden, The Struggle for Airways in Latin America, New York, 1943, pp. 83–88, 98–107, 119.) The attraction of a sea voyage for pleasure travel, as well as the marked cost differential, should insure, however, the retention of substantial first and cabin class traffic by the steamships. On the other hand, the creation of new business, tourist, and governmental traffic as a result of the speed offered by aircraft, should far surpass in magnitude that diverted from ocean channels. See comments and estimates of Burden, op. cit., pp. 135–136, and Warner, Wilbur Wright lecture, pp. 13–15, for American intercontinental and trans-Atlantic air traffic respectively.

Of interest are the fare reductions for Latin-American traffic recently proposed by Pan American. Postwar passenger fares would be lowered from the present schedule averaging 8.75 cents per passenger-mile to one averaging 4.25 cents with some rates as low as 3.5 cents. ("PAA Cuts Fares; Reveals Global Plans," American Aviation, August 15, 1944.)

1. Local and feeder air service of the airplane variety involve higher costs than long-distance service. Discussion of cost and numerous other problems of local air transport service is undertaken in an article by E. P. Warner, "Requirements of Local Air Transport Service," Aeronautical Engineering Review, Vol. 3, No. 2 (February, 1944), pp. 13–47. Interestingly enough, passenger traffic has been most dense over the shorter of the long runs, e.g. New York to Boston (Van Zandt, op. cit., pp. 351–353).

2. An analysis of comparative "real business" costs of travel via bus, railroad coach, and air is presented by Frederick (op. cit., pp. 308–310). It is reasonable to anticipate progress in railroad and bus technologies, the embodiment of such progress in operations, and thus improvement in their competitive position. For a discussion of possible economies, see National Resources Planning Board, op. cit., pp. 2–5. The U. S. Federal Coördinator of Transportation (Passenger Traffic Report, Washington, D. C., 1935, Exhibit 7, Analyses 64 and 70) has calculated for the year 1933 bus revenue per passenger-mile at 1.4 cents and costs of all-coach, suburban-coach, other-coach, and reserved rail travel at 2.9 cents, 1.5 cents, 2.7 cents and 4.2 cents per passenger-mile, respectively. For discussion of elasticity of demand for lower-class rail passenger transportation, of the ability of the railroads to provide such transportation profitably at greatly reduced costs, and of other relevant considerations, consult the above report, sections 20–33, 55–65, and Healy, op. cit., pp. 276–279.

surface transport facilities and utilizing primitive and obsolete mechanisms, the rôle of aircraft will be still more predominant in all classes of commercial passenger traffic. Not only huge time savings will be available through air service, but quite frequently cost savings as well. Nevertheless, in terms of local currencies and levels of income, air transport costs may often be burdensome; and though passenger traffic may increase relatively by tremendous strides, its absolute volume may remain comparatively small.[3]

Another important phase of the question of population movement is that of private (individual and family) aircraft. Though momentous changes in regional economic structure are implicit in such movement, little reliable and objective information and data exist upon which to formulate a prognosis. Nevertheless, certain relevant observations can be made.

Technical, rather than economic, obstacles will circumscribe future use of private aircraft. Production and operation costs seem certain in the future to be on a level permitting mass adoption.[4] It is the congestion inherent in mass commutation which must be combated; marked success in this effort is insured through the development of new techniques of navigation and traffic control, by the provision of sufficient airports, landing strips, and other aerial facilities and equipment, and through progressive city planning. Congestion, too, could be substantially alleviated, were the helicopter (much superior to the airplane in maneuverability, control of movement, safety, and landing space requirements) or a combination aircraft-automobile mechanism (capable of converging

3. See Burden (op. cit.) for actual and potential examples of these time and cost savings (pp. 98–101) and for general analysis of air transport in Latin America. These savings will be especially important where adverse topography obstructs surface movement. It should be remembered that aircraft, having fostered the economic development of these regions, have already been in certain cases, and may be quite extensively in the future, supplanted by superior surface transport facilities.

4. For the immediate postwar market, William D. Hall in an address before the Society of Automotive Engineers (Flying, Vol. 34, No. 5, May, 1944, pp. 28–29, 108, 112, 116) foresees light airplane models with minimum equipment priced as low as $1,000, two to five-place models of medium performance, ranging from $1,500 to $3,000, and a high-performance, small model available at $2,000. Also see J. H. Geisse, "Suggestions for Furthering Private Flying," Aeronautical Engineering Review, August, 1944, wherein are presented limited cost data on private airplane operation, and William B. Stout and Franklin M. Reck, Tomorrow We Fly (New York, 1943).

upon dense traffic areas via superhighways) widely adopted.[5] It seems reasonable to predict, very roughly, that within a quarter of a century following the close of hostilities private aircraft will be utilized as extensively as was the automobile in recent prewar years, and even more extensively in those backward regions where, as we shall note later, cargo aircraft will stimulate vigorous economic growth. Very tentatively put, the automobile should, in large part, be supplanted by aircraft in long-distance travel, but should retain dominance in local and short-distance movement, in which it will possess relative advantages in respect to cost and time, assuming the existence of roads and highways.[6]

As for cargo movement in advanced, industrialized regions, it seems reasonable to conclude that all the nations concerned will eventually come to appreciate the advantage of expedited first-class mail, and in major part employ air service without surcharge, nationally and internationally, wherever aircraft can effect quicker delivery.[7] In express traffic, too, aircraft will doubtless largely

5. The Civil Aeronautics Authority has, and the war effort will have, through training new pilots, mechanics and other aircraft personnel, and by increasing the air-consciousness and receptiveness of the public, provided a major impetus to postwar civilian flying. For statistics on the rapidly increasing, but still relatively small, reservoir of private certified pilots, 1930–1942, see Ernest W. Williams, Jr., The Outlook for Domestic Air Transport, Planning Pamphlet No. 21, National Planning Association (September, 1943), p. 7. The war effort, too, in its requirement of air fields, landing strips, and aerial equipment to facilitate aircraft operation, will have contributed much to the related problems of congestion and safety. To combat these problems, specialization of airports has been suggested, with private airplane traffic serviced by a ring of plane parking airports on the peripheries of urban-metropolitan areas. (Werner Hegemann, City Planning, Housing, Vol. III, edited by W. W. Forster and R. C. Weinberg, New York, 1936, p. 64.)

6. It is very conceivable that private aircraft will incur sizeably greater expense in operation than the automobile; as a consequence the latter's cost appeal to lower-income groups may maintain on the highways a certain proportion of long-distance travel. In addition, lower-income groups may not be able to afford both transport means, and thus may be forced to select one of them. The alterations to the above statements, should a combination aircraft-automobile technique be evolved, are obvious. We must remember, too, that new traffic will emerge and that the aggregate of transport services obtained from private mechanisms will be tremendously increased.

7. European nations had already accepted this practice for continental mail before the present war; and England had applied it to her Empire air routes with favorable results. For arguments favoring this practice, for statistics on air mail development, and for estimates of potential air mail traffic and other relevant material for the United States, refer to Frederick, op. cit., Chaps. 18, 19; Van Zandt, op. cit.; and Francis A. Spencer, Air Mail Payment and the Government (Brookings Institute, Washington, D. C., 1941).

supersede surface facilities.[8] The speed element in conjunction with only moderately high charges would be sufficient to establish aircraft in a strong competitive position. In addition, aircraft can offer competition with surface facilities for express carriage from a cost standpoint. Warner's first-generation cargo aircraft, operating at 65–70 per cent capacity payload, and excluding pickup and delivery expense, permits a minimum practicable charge of somewhat above 14 cents per ton-mile. Van Zandt, peering further into the future, arrives at a corresponding charge of around 12.5 cents.[9] These figures may be compared with the 1938 basic first-class rail-express 50-mile block *haulage* tariffs of 26, 28.5 and 31 cents per hundred pounds for Eastern, Southern and Western zones, respectively.[1]

8. Air cargo operations in the United States in the past have been impeded by excessive rates, as well as by lack of interest and attention and difficulties of pick-up and distribution. For a history of rates, see L. N. Selig, J. D. Michel and A. Burstein, A Brief Study and A Plan for the Participation of the American Railroads in Air Freight Operations in the United States, General American Transportation Corporation (Chicago, 1940), pp. 25–26; and for a relatively good discussion of air cargo development and problems of air cargo transport and for presentation of relevant statistics, refer to Frederick, op. cit., Chaps. XX–XXI. As of October 15, 1944, American Airlines has instituted a new "Airfreight" service inclusive of pick-up and delivery, with rates ranging down to as low as 30 cents per ton-mile ("Airfreight Rates as Much as 53 Per Cent Under Air Express," American Aviation, October 15, 1944.)

Intra-European air cargo traffic in prewar years had modestly exceeded that on global and United States air routes (Lissitzyn, op. cit., Table I, p. 42). Obviously, in recent years the war's impact has greatly stimulated air cargo movement, nationally and internationally, and has altered its character and distribution (Williams, op. cit., pp. 7–10, 22).

9. Van Zandt's computation is based on costs (direct and airline overhead) per capacity ton-mile of 7.5 cents and a profit of 5 per cent gross revenue. Op. cit., p. 350.

1. In a broad, rough fashion, these haulage tariffs are equivalent to 10.4 cents, 11.4 cents and 12.4 cents per ton-mile, respectively, and are subject to modest discounts progressively increasing with carriage distance. In 1939 increases of 5–10 per cent per hundred pounds were authorized by the Interstate Commerce Commission. Second-class rates are 75 per cent those of first-class, while third-class (exceptional) rates vary with traffic needs and conditions of service.

To derive the over-all rail express charge of 1938, an allowance for rail terminal service of 30 cents per hundred pounds and another allowance (altered as of 1939) for pick-up, delivery and terminal service by the express agency of 35 cents per package less than 100 pounds, proportionally increased for packages over 100 pounds, must be added to the above haulage tariffs. Van Zandt, on the assumption that the future "average" air shipment would weigh 25 pounds and involve 8 ton-miles of transportation, allocates 5.5 cents per ton-

In the case of freight any encroachment of aircraft upon surface facilities will be relatively minor in advanced regions. Aircraft probably will never be able to achieve the efficiency of surface media in the mass movement of heavy and bulky commodities. Transport costs of coal shipments on the Great Lakes have been estimated as low as 0.04–0.05 cent per ton-mile (full utilization, exclusive of terminal charges). On the Mississippi River system, over-all transport costs range chiefly from about 0.2 cent to 0.5 cent per ton-mile. By tanker, total costs are about 0.1 cent per ton-mile (50 per cent utilization); by pipe-line, 0.38 cent per ton-mile. Non-local trucking incurs a line-haul expense in the neighborhood of two to four cents per ton-mile. Average rail freight costs

mile (45 cents per package-shipment) for pick-up and delivery expense; the corresponding statistics (1938–39) for typical first-class rail express are 29 pounds, 7¼ ton-miles, 4.8 cents (35 cents). In this manner Van Zandt foresees "an average possible charge for air freight of 18 cents or less per ton-air-mile," as compared with 17.6 cents and 17.1 cents, the present (1939) average charges per ton-air-mile for rail express parcels and first-class rail express, respectively. (Van Zandt employs a ton-air-mile concept to adjust for differences in air and rail distance.) For further details see U. S. Interstate Commerce Commission, Reports, Vols. 83, 89, 231, pp. 606–681, 297–323, and 471–507 respectively, and Van Zandt, op. cit., pp. 348–351. It is interesting to note here that Pan American Airlines has proposed for Latin American routes postwar rates from 20–40 cents per ton-mile for first-class commodities; 15–25 cents, second class; 10–15 cents, third-class. Pick-up and delivery service is not provided. ("PAA Cuts Fares; Reveals Global Plans," American Aviation, August 15, 1944 pp. 20–22.)

Obviously, costs realized on domestic air routes may exceed predictions, as a result of inefficiencies of operation, provision of luxury service (high-speed runs), extension of feeder-lines to numerous cities and communities, and other factors. At the same time, however, we can expect continuing reductions in air transport cost as a result of technological advance, though doubtless curtailment of rail and truck costs are to be anticipated from parallel technological progress and from elimination of operational inefficiencies. Also, possibility of deferred air rates for less urgent and postponable shipments must not be overlooked as a means of increasing the payload factor, thereby diminishing realizable ton-mile costs (for Latin American experience see Burden, pp. 112–113). Regarding overseas air commerce, costs, as noted previously, will be greater than on overland routes; but the tremendous time differential of aircraft over ocean vessels should more than offset its adverse cost position for express traffic.

In addition to diversion of express traffic from surface facilities, aircraft will stimulate the formation of a vast quantity of new traffic (e.g. style goods, perishable commodities). Van Zandt has estimated potential United States domestic commodity and mail air traffic at around 615 million ton-miles per annum within the next decade or two (op. cit., p. 354). For other interesting estimates see Spencer A. Larsen, Air Cargo Potential in Fresh Fruits and Vegetables, Wayne University Studies in Air Transport, No. 1 (Detroit, 1944).

and less-than-carload service costs for the year 1932 have been estimated at 0.83 cent and 7.0 cents per ton-mile, respectively (average rail revenue per ton-mile in 1939 was 0.983 cent).[2]

The most promising opportunities for air cargo carriage are to be found in undeveloped regions now dependent upon primitive and inadequate transport facilities. Owing to the flexibility inherent in aircraft and the relatively small initial investment entailed in the establishment of a skeleton of airways, aircraft can perform a vital developmental function.[3] Already a tremendous quantity of new traffic has been developed, to say nothing of expediting existing traffic, in a number of these isolated regions, often at moderate rates.[4] Whether aircraft will retain dominance in freight

2. Cost data are from National Resources Planning Board, op. cit., pp. 408–409, 436–442; Healy, op. cit., Chaps. X, XI; and U. S. Federal Coördinator of Transportation, Merchandise Traffic Report (Washington, D. C., 1934), pp. 134–135, 282–283. Brightest prospects for inroads by aircraft are in the spheres of rail less-than-carload and truck high-grade commodity traffic. For further relevant cost material on the former, see Healy, op. cit., pp. 211–212, and U. S. Federal Coördinator of Transportation, op. cit., pp. 11–17.

Furthermore, the cost differential between water and air freight rates for transoceanic traffic probably will be enormous, though elimination by aircraft of transshipments in transport from inland point to inland point may, in some cases, outweigh this differential.

3. Total investment in Latin American-owned air transport embracing a net of approximately 20,000 miles, as of December 31, 1941, was only about $7,600,000 (Burden, op. cit., pp. 160–165). In 1939 scheduled United States domestic air operations covering a route-mileage of 36,581 involved an investment of about $40,000,000 by air carriers; and for that year approximately $84,000,000 investment in airports and airways has been allocated to foreign and domestic scheduled operations. Roughly, then, investment per scheduled domestic route-mile lies between $2,000 and $3,000. (U. S. Civil Aeronautics Authority, op. cit., p. 50; Van Zandt, op. cit., pp. 337–340). In contrast, United States steam railways have a total investment of $26,502,582,158 in road and equipment, or $109,006 per mile owned (U. S. Interstate Commerce Commission, Statistics of Railways in the United States, 1939, Washington, D. C., 1941, p. 117). Though obviously territory serviced by railway and aircraft cannot be compared in terms of route-miles, nevertheless the relatively light investment per route-mile and the relatively short life-span of much plant and equipment confer on aircraft a most critical rôle for the economic growth of the regions under consideration. For a compilation of road and highway costs, chiefly in British colonial development, refer to J. Edwin Holmstrom, Railways and Roads in Pioneer Development Overseas (London, 1934), pp. 162–187.

4. Substantiating this statement are traffic statistics for 1938; U.S.S.R., New Guinea, Canada, Honduras and Colombia, all deficient in surface transport facilities, in order, lead other nations in tons of merchandise transported by aircraft (Lissitzyn, op. cit., pp. 49–50). The outstanding pioneer in the development of air transport in isolated regions has been TACA, operating around 5,000 route-miles in Central America in 1940, carrying almost 14,000

carriage obviously is contingent upon the balance of traffic volume and future cost. Where moderately heavy industrialization and commercialization result from the stimulus afforded by aircraft, surface facilities will probably usurp freight traffic, leaving air express relatively untouched.[5]

III

In the light of the analysis developed in the preceding sections, the implications of aircraft for economic structure and the progress of society become fairly clear, and to these questions we now turn. Resemblances between the impact of aircraft and that of the street and electric railway and the automobile (resulting from increased population mobility) and that of the railroad and canal (brought about by reductions in the cost of commodity movement) will be stressed.

tons of express and freight (126 per cent of United States domestic aggregate), and performing over one million ton-miles of transportation (30 per cent of United States domestic total). Characteristic of Latin American local lines have been rates averaging 80 cents to $1.00 per ton-mile for express and occasional shipments, and rates averaging 30–35 cents (and in some cases below 20 cents) per ton-mile for large, bulky and deferred shipments. The Latin American air transport industry, in contrast to those of Europe and United States, receives a large proportion of its commercial revenue from cargo carriage. But its development has been greatly impeded by insufficient subsidization and lack of adequate technical personnel and modern equipment. See Burden, op. cit., Chaps. V, IX and excerpts from an address by J. Parker van Zandt, Air Transportation, Vol. 2, No. 1 (January, 1943), pp. 30–33, 37–42.

5. For instance, in Brazil, where in prewar years the existing scant net of railways was poorly constructed, equipped, and maintained, and dependent upon inferior fuels (save for imports), average receipts for 1937 and 1938 from merchandise (freight and vehicles) nevertheless approximated as low as 1.1 cent per ton-mile (Instituto de Geografia e Estatistica, Anuario Estatistica do Brasil, Ano V, 1939–1940, pp. 264–265). And Holmstrom (1934) in an excellent and extensive presentation of hypothetical as well as reported rail and road operating cost data and consumer charges, chiefly in British colonial possessions, observes the greater efficiency of colonial railways over corresponding roads, and concludes that a "typical" British colonial railway can expeditiously carry minerals, agricultural exports and fertilizers at rather under one pence per ton-mile, manufactured goods at three to six pence per ton-mile, and non-essentials at six pence to one shilling per ton-mile (Holmstrom, op. cit., Chaps. IV–X, esp. p. 142). On the other hand, the inertia of tradition and reluctance to engage in heavy investment programs may somewhat retard development of economic surface facilities. In that vast expanse of Latin America, as well as in numerous other regions unpenetrated by modern surface techniques, transport by primitive mechanisms is extremely expensive. (Burden, op. cit., pp. 112–113, cites 30 cents per ton-mile by mule; also see Holmstrom, op. cit., pp. 211–212).

Participation by aircraft, especially by privately owned aircraft, in population transportation should effect vast changes in urban-metropolitan textures and patterns. The consequent increase in population mobility and greater speed and flexibility of movement will further stimulate population dispersion within urban agglomerations. Wealthier and higher-income groups will assume the lead in penetrating outlying and rural areas. As aircraft production and operation become more efficient, as physical resistances (translated into economic costs) to navigation and traffic control are overcome, moderate-income classes may be expected to participate actively in this centrifugal movement. Residences acquired in outlying territory, though amply spaced, will tend to cluster around nuclei, somewhat analogous to present-day community or neighborhood centers, wherein will be aggregated basic retail, financial, educational, amusement and recreational services. The relative position of these satellite nuclei about the mother city will be largely determined by topographical conditions and the previous locus of population settlement.[6]

Through increased population mobility and diminished time dimension of distance, aircraft should enlarge the potential consumer hinterlands of urban centers, and thereby lead to great site differentiation and selectivity.[7] There will be fewer primary cities, but these will cater to increasingly greater populations increasingly diffused. At or about the heart of each primary city will develop

6. For background material, history, and trends in urban ecology, refer, among other sources, to McKenzie, op. cit., Homer Hoyt, The Structure and Growth of Residential Neighborhoods in American Cities, U. S. Federal Housing Administration (Washington, D. C., 1939); and Stuart A. Queen and Lewis F. Thomas, The City; A Study of Urbanism in the United States (New York, 1939).

7. In an analysis of census data (1940) on distribution of retail sales in cities of 10,000 or more population, the writers found strong support for the thesis that through extension of urban consumer hinterlands the automobile, and to a minor extent the street and electric railway, have induced marked selection and differentiation among these cities in Food, General Merchandise and Apparel Groups. For additional evidence, see, among other sources, P. D. Converse and R. V. Mitchell, "The Movement of Retail Trade within a Metropolitan Area," The Journal of Marketing, Vol. II (July, 1937), pp. 61–67; E. Van W. Reed, "An Analysis of the Retail Trading Relationships of Elgin, Illinois, a Satellite City," Studies in Business Administration, Vol. IX, No. 1 (Chicago, 1938); J. A. Pfanner Jr., "A Statistical Study of the Drawing Power of Cities for Retail Trade," Studies in Business Administration, Vol. X, No. 3 (Chicago, 1940); and for material on rural trading areas, J. H. Kolb and R. A. Polson, "Trends in Town-Country Relations," University of Wisconsin Agricultural Experiment Station, Bulletin No. 117 (Madison, 1933).

increased centralization of major distribution, transportation, financial, and perhaps governmental functions, and of select retail, choice cultural, recreational, and perhaps educational facilities. Skyscraper residential buildings may appear at the core to accommodate those of the higher-income groups who prefer to live near the center of things.[8] These developments will encroach upon central areas now designated as slum and blighted zones, driving their lower-income populations into abandoned suburbs. The latter areas, as well as those less fortunately situated middle- and large-size cities, many of whose functions will have been usurped by primary centers, may deteriorate into future slums and blighted areas.[9]

The impact of aircraft upon population movement and upon the changing structural and functional relations of city and country will open sizeable investment outlets in the postwar period. An

8. Regarding location of airports, growing diversification of aircraft types and aircraft flight requirements probably will confine certain types of flying activity to separate airports. Commercial transport most probably will be concentrated at a single vast municipal airport situated at short-time distance from the heart of the city. Where the airplane rather than the helicopter is employed for individual flight, rings of airports will be established around the outskirts of the city and suburban areas; these smaller airports will connect to rapid transit facilities converging at the center of the primary city. For instance, see Charles B. Donaldson, "The Airport Situation," Aeronautical Engineering Review, Vol. II, No. 12 (December, 1943), pp. 41–45.

9. Mention should be made of future urban-metropolitan structure from an architectural standpoint. Frank Lloyd Wright, in his Autobiography (New York, 1932), advocates, as an ideal, complete decentralization of the city. He conceives a population scattered and diffused throughout the country, superhighway systems providing means of rapid intercommunication. Along these traffic arteries convenient neighborhood distribution centers, meeting places, etc. would exist to offer all forms of decentralized but integrated services. The metropolis of the future is at most a centralized depot of some kind. Le Corbusier (The City of Tomorrow and its Planning, translated by Frederick Etchells, London, 1929), on the other hand, recognizes the economies of specialization and mass production in vast concentrations of industrial, commercial, financial and other activities, and accordingly emphasizes functionalism. He visualizes at the heart of the city huge skyscrapers set immense distances from one another, surrounded by large open spaces and parks, allocated to business and commercial purposes alone, and intricately interconnected. For residential purposes there are blocks of villas or tenement houses of relatively low height and removed from the center of the city. On the average, nearly ninety per cent of the ground area consists of open spaces in the form of wide roadways, playing fields, gardens and parks. Combining (1) for primary cities Le Corbusier's scheme, modified somewhat to recognize limitations and the geographic sensitivities of aircraft technology, and (2) for ruralized life Wright's conception, would yield in the writers' eyes an ideal architectural model consistent with economic tendencies.

upsurge in residential building will accompany the dispersion of urban population into outlying territories. Large developmental projects in the form of roads, community centers, public utilities, etc. will be required by the newly settled population. Primary centers will need to be reoriented and reconstructed. Such construction activities in the past have always been strong bulwarks behind economic prosperity;[1] the same may well hold for the future.

Moreover, just as the rise of the automobile stimulated the growth of a host of novel industrial and commercial enterprises, so will aircraft. On the one hand, industries to provide equipment and service for aircraft, airways, and airports will develop. These, however, already will have received a strong impetus from the war program. On the other hand, trades will emerge to satisfy the needs and desires of a more mobile population. Travel and recreation will be especially important here; aircraft, by relaxing time and geographic restrictions on movement, will give freer rein to the propensity of the American public to rest and play in distant places. In all this lie additional investment opportunities.[2]

Inherent in air cargo carriage are the emergence of new industrial and commercial areas and population agglomerations, alterations of trade channels, and outlets for new investment. Aircraft are not subject to the geographic limitations of the canal and the railroad, being barely sensitive to topography and physical boundaries. This will permit a broad reduction of transport cost in backward, undeveloped sections, and in regions accessible only with difficulty by land or sea. The geographic sphere of economic relations will be greatly extended. A revaluation of the world's resources will follow. Resources have economic significance only in reference to technology. Technological developments, such as aircraft, which bring into economic availability resources hitherto

1. Refer, among other sources, to Silberling, op. cit., Chap. 9; A. H. Hansen, Fiscal Policy and Business Cycles (New York, 1941), pp. 19–27; and C. D. Long, Jr., Building Cycles and the Theory of Investment (Princeton, 1940).

2. Conversion of war aircraft factories to peace-time production, and perhaps construction of new plant, will open some investment outlets, particularly for the manufacture of individual private aircraft. However, the unparalleled efficiency (traffic capacity per vehicle per year) of aircraft will severely circumscribe investment required for cargo and commercial passenger service.

For interesting remarks on the recreational potential of aircraft, see George T. Renner, Human Geography in the Air Age (New York, 1942), pp. 159–160, 162.

unexploited because of technical limitations, upset production functions and compel reconsideration of the most efficient locations for industry and commerce. Those areas generously endowed with strategic materials unutilized because of inadequate surface transport facilities, provided they present no such serious obstacles as climatic restrictions, diseases, extreme political instability, etc. will possess potentialities for an upsurge of industrial and commercial development. A case study of such an area, Brazil, is presented in the Appendix.[3] Some of the older industrial areas may receive a setback from the shift of industry to more favorable locations. Others, which possess decided superiority for production, may experience further concentration and growth by the extension of their market to the newly opened areas.[4] Concomitant with these shifts of industry, new trade routes and commercial sites will arise, and new agglomerations of population. Just as the canal opened up the Appalachian interior and the Pennsylvania anthracite coal fields and the railroad penetrated the Mississippi River valley region and the Far West, just as the canal and railroad caused shifts and growth of industry and commerce and population redistribution within the United States, aircraft, by enlarging the world area under intercommunication, can effect marked alterations in the structure of world trade, industry and population.

Other alterations of trade routes and primary commercial centers will result from new geographic emphases. Desert, mountain, oceanic expanse and other topographic barriers to surface movement will recede in importance; atmospheric and weather characteristics, and perhaps island chains and peninsular bridge areas, will come into prominence as critical geographic detail. Accordingly, nodal sites, where sea meets land or where breaks in the earth's surface occur, lose significance for commercial activity. For international air transport, seaboard cities have no inherent advantage over inland cities. Obviously, in addition to geographic circumstances, the commercial strategy of sites for air transport will depend on (1) relative distances to other primary centers, and

3. The developmental achievements of aircraft in Alaska, Colombia, New Guinea, and several other backward regions of the world are observed by Renner, op. cit., pp. 110–114, 162–168.
4. Within these older industrial areas, particularly the more favored ones, there may be, in the vicinity of airports, sizeable relocation and growth of light industry and distribution trades engaged in foreign and domestic commerce.

here distance tends to be measured along great circle courses, rather than along paths of least resistance to surface movement; and (2) the economic importance of the various sites themselves, in other words, the economic inertia and tradition of the existing pattern of industrial, commercial and population settlement.[5]

The above analysis has tremendous implications for postwar investment potentialities. If air transport is encouraged and permitted to realize its possibilities, large capital exports will be required to develop backward and unexploited areas. Intense construction activity will ensue. New industrial plant and equipment, new development and redevelopment of cities, housing and public utilities, all will be required for the new concentrations of industry and commerce and the new agglomerations of population. Substantial capital outlays will be needed for the growth, and perhaps increased centralization, of industry and commerce in the older industrial areas; abundant investment opportunities will be provided by the shift of industrial areas, commercial sites and population within the older industrial setup. In the past, industrial, commercial and population adaptations and adjustments to transport innovation always have afforded huge investment outlets. The same relationship may well characterize the future, and thus be a strong impetus toward the achievement of postwar world prosperity.

The rôle of international planning and assistance in the transport development of backward regions of the world has already been referred to. Large-scale governmental assistance to, and sub-

5. The reader must bear in mind that these alterations in trade arteries and strategy of commercial sites have reference only to express, commercial passenger, and that higher-grade commodity traffic which aircraft will usurp from surface facilities or create. Ordinary freight will seek the economically least resistant surface channels, though, to be sure, some will be diverted to air lanes, when tremendous savings are available in distance and in transshipment expense (e.g. in transportation from inland point to inland point over an ocean expanse).

We must remember, too, that certain geographic details, though slight in character, may be of critical importance in determining future centers of air transport. Desirable characteristics of airport sites are approaches free of adjacent mountains and hills, relatively constant and predictable winds, good visibility and absence of fog and haze, and perhaps for heavy air cargoes, low altitude (the higher the altitude the longer the runway required).

For a discussion of air lanes and of geographic factors restrictive to air transport, consult Renner, op. cit., pp. 125–133. Also see J. Parker van Zandt, The Geography of World Air Transport, Brookings Institution, Washington, D. C., 1944.

sidy of, transport innovations, particularly in undeveloped areas, certainly is an old and established practice. The history of the United States is replete with illustrations in the construction of its canals, railroads, and highways, and in the improvement of its waterways.[6] Similarly, to attain a comprehensive utilization of air transport, subsidy to private enterprise and encouragement to private ownership will probably be necessary. Provision of airports, airways, equipment for traffic regulation and control, etc. seem likely to require heavy governmental assistance. We have mentioned the potentialities for postwar national progress inherent in a widespread development and adoption of aircraft as a mode of transport: the investment opportunities resulting from population movement and dispersion and the growth of huge metropolitan districts, in the rise of a host of new industries and extended recreational and travel activities, in the industrial, commercial, population and urban adaptations and structural rearrangement of the United States economy. The extent to which these investment opportunities will be realized and these national forces toward postwar prosperity set in motion will depend, in large part, upon the availability of public aid.[7]

At the same time, a broader concept of assistance must be

6. During the canal era, save for a few undertakings, states carried through the entire program of providing canal networks, investing for those times considerable sums in these works. Subsequent inland waterway and harbor improvements and maintenance were to a still greater extent furnished by public bodies. Throughout the railroad era, initiative lay with private enterprise, but subsidies by the various governments, especially for projects through undeveloped territory, were enormous. For instance, of the cost recorded to December 31, 1882, for construction and equipment of railroads at that date operating Federal land-grant mileage west of the Mississippi (the major transcontinentals belong in this category) about 57 per cent is estimated as having been offset by construction aids. In the street and electric railway era, the rôle of public aid was negligible, but it is significant to note that this transport medium serviced already developed population centers. Finally, public encouragement to the widespread adoption of the automobile and truck through construction of highway networks has been tremendous. In the period 1921–32 alone, approximately 22 billion dollars were expended on highways and streets by federal, state, city and local governments. Further details are available in U. S. Office of Federal Coördinator of Transportation, Public Aids to Transportation (Washington, D. C., 1938–40).

7. The problem of subsidy to aircraft operations is not unrelated to that of subsidy to other forms of transportation. The subsidization of transport must be viewed as a whole, in order to avoid that social waste which results from over-encouraging two or more transport media competing in a defined field. From this standpoint, ideally the quality and character of services to be performed by each transport media should be determined at each given point of time, and subsidies meted out accordingly.

recognized. Air transport transcends national boundaries and embraces an international order. Accordingly, assistance to the development of air transport should be on an international basis. Already various governments have subsidized private enterprise engaged in air transport; but international collaboration and coöperative aid are required for a thorough, beneficent airway development of backward countries. Mention has been made of the investment outlets inherent in the drastic reduction in transport cost permitted by aircraft, through extension of transport facilities to undeveloped and inaccessible areas and through expansion of the geographic sphere of economic relations: investment outlets available through shifts and relocations of industry and population, through alterations of trade channels and of the strategy and nodality of commercial centers. International collaboration and coöperative aid, not only in encouraging airway development of backward countries, but also in furnishing capital and technical facilities to stimulate social and economic advance, will be crucial factors. To a considerable degree they will determine the extent to which aircraft's potentialities for evoking industrial and commercial growth in backward areas and spreading prosperity through the world — for achieving postwar economic progress — will be realized.

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CAROLINF ISARD.
WALTER ISARD.

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NEW YORK CITY

APPENDIX: THE CASE OF BRAZIL

To illustrate more specifically the potential impact of aircraft upon undeveloped areas of the world, we examine Brazil. This country possesses a wealth of agricultural and mineral resources. Brazilian estimates have classified eighty per cent of the land as potentially productive; at present only a small fraction is in commercial use. Brazil has the largest and highest-grade iron-ore reserves known in the world. The State of Minas Gerais alone contains upwards of twelve billion tons; deposits lie close to the surface, and can be mined with ease. A vast range of other minerals are present: manganese, copper, lead, zinc, nickel, etc. Waterpower and forest resources abound. However, none of this wealth has been exploited on a significant scale.

A complex of forces has impeded Brazil's development: exploitative attitudes and feudalistic institutions of the settlers; an unstable course of settlement; a poverty-stricken, ill-educated, diseased, malnourished population; absence of aggressive political and social leadership; disunity and inadequate internal development. From an economic standpoint, there have been three principal interrelated factors operative: poor fuels, lack of capital, and inadequate transport facilities. Coal deposits, though abundant, contain considerable ash and volatile matter. It is only with difficulty that even a

low-grade coking coal is manufactured. Petroleum discoveries are claimed with optimism, but they await appraisal and commercial utilization. Lack of capital, reflecting social retardation and political instability, has precluded a program of heavy investment in capital goods — in public works as well as in agriculture, mining, and industry.

Inadequacy of transport facilities has ever plagued Brazilian progress. Geographic features — the sharply-rising gradients of the Great Escarpment south of Salvador, and the poorly-navigable, circuitous river systems (save the Amazon) which fail to converge to a natural focus — have imposed obstacles to surface transport. Equally and perhaps more important as hindrances have been human (technical) and financial limitations. Inland navigation on the whole is poor. Railroads are inadequate: poorly constructed from poor materials, poorly equipped, and poorly maintained. Highways, of recent origin and well-constructed in some regions, in general are confined to much the same areas as are the railroads, namely, the coastal fringe and the southern states. The vast interior remains practically untapped by modern transport media.

Within this interior of Brazil that vicious circle of cause and effect which confronts most backward areas is present: a primitive economy cannot support the construction of surface facilities entailing heavy investment; at the same time the want of transport media impedes the much coveted economic development. Aircraft, although involving operating costs higher than those in mass shipments by surface facilities, possess an extreme flexibility and require a comparatively small outlay for airways and a minimum of equipment; in this manner they have a critical advantage as a developmental medium. Preliminary and experimental tapping of potential mineral wealth is easily and relatively inexpensively achieved with the use of aircraft. Agricultural settlement can also be stimulated. Even though aircraft may not be employed extensively in marketing heavy, bulky commodities, they can play a major rôle in transporting perishables, high-grade commodities, and sporadic, irregular shipments of all types of goods, as well as in providing that contact with established centers of population which is essential to expanding colonization. Perhaps still more important is the unity which aircraft will effect. They will bind more closely Brazil's various economic regions and resources, and perhaps will provide that integrated economic structure which she has always lacked. In this manner economic growth will be encouraged. Much, however, depends upon availability of capital and technical ability, educational and hygienic progress, political attitudes and leadership, extent of postwar international collaboration and assistance, and related factors. It is conceivable that, within a favorable framework of forces, aircraft can give that impetus to the utilization of Brazil's extensive and diverse wealth which may allow her to achieve the status of the dominant industrial reservoir (despite limitations of fuel) of a much more developed South America.[1]

1. Among numerous other publications, source material was gathered from P. E. James, Latin America (New York, 1942); Brazil, Ministerio das Relacoes Exteriores, Brazil 1939–40 (Rio de Janeiro, 1940); R. Nash, The Conquest of Brazil (New York, 1926); J. P. Calogeras, A History of Brazil (Chapel Hill, 1939); and M. W. Williams, The People and Politics of Latin America (New York, 1930).

PAYMENTS TO SENIOR CORPORATION EXECUTIVES

SUMMARY

Public hostility towards "excessive payments" to corporation executives, 170. — Reasons for this hostility, 171. — Sources of information, 171. — Definition of terms, 172. — Nature of the data available, 172. — Dollar payments by large companies, 173. — Distribution of aggregate payments, 175. — Relation to sales and earnings, 177. — Relation to functions, 177. — Payments by smaller companies, 179. — Relation to sales and earnings, 181. — Relation to functions, 181. — Summary of conclusions, 182.

Business historians in future years may not designate the early 1940's as the period when exceedingly large salaries for corporation executives received their death sentence, but they will certainly point to it as the time when this question was an acute political issue. Although the direct attack on the payment of such salaries appears to have been initiated by the wartime administration in Washington, hostility already existed in the minds of many citizens toward "excessive payments." What constituted such payments, however, were vague amounts never clearly defined. Unfortunately, public prejudices in this controversial situation were due to limited knowledge of an exceedingly complicated and important subject. Such knowledge was chiefly based on large payments to a relatively few individuals whose names were featured in the public press.

This study is planned to broaden the understanding of the subject by reporting dollar payments in 1941 to the various men classified as "senior" or "executive" officers in a selected group of large and small companies. These figures should give some idea of what the *typical* executive in these two groups of corporations received. It will also answer such questions as: What percentage of earnings goes to the executive group? Do total payments absorb a significant percentage of the company's sales dollar? What payments are typically made to executives in specific positions, such as Chairman of the Board, President, Vice-President and Treasurer?

For various reasons best known to himself and his advisers, President Roosevelt urged in 1942[1] that $25,000 annually, net

1. President Roosevelt's Message to Congress on Price Controls, The New York Times, April 28, 1942, p. 12.

after taxes, or about $67,000 gross, should be the top limit during the war for salaries to corporation executives, irrespective of payment plans or of the size, condition, or earnings of the corporation by which an executive was employed. This proposal, even though it ignored the many inequities which it precipitated and the whole question of income from investments and other sources and the complications involved in applying it, was made effective by executive order. The executive order was issued after Congress had specifically refused to provide such a salary limitation by legislation, and there were rumors that certain governmental departments with responsibility for enforcing the ruling did not approve of it. Congress subsequently expressed its disapproval in an emphatic manner. This revolt against an administrative act, however, did not necessarily reflect a sympathetic attitude toward large salaries for senior executives; it came, rather, because of the political significance of the Presidential order.

The two basic reasons leading to widespread public concern over the question of corporate salaries were a lack of general knowledge as to how executives were paid and how much they received, and a general feeling of distrust because of the emphasis in the public press over a period of years on certain high salaries. If there had been a definite understanding of the size of over-all payments in most corporations, as well as the leveling effect of the present income tax laws, the whole issue might never have arisen.[2] Adequate information, however, was not generally in the hands of the public, even though it was available in a limited way and in rough statistical form in various governmental departments.

Since detailed data in reports published or submitted to the Government on payments to *all* executives are not generally available, the main source of such material is corporations themselves. Therefore, a group of well known food and other industrial companies was asked for detailed information on payments to all officers or to the twenty-five highest paid men for 1941, the year before the specific controversy relating to salary limitation became acute. Information also was asked on payments to men holding various executive positions. Twenty-eight companies submitted data. Unfortunately the material from certain of the companies did not conform to requirements of the study and could not be used.

2. "Limiting Executive Salaries in Wartime," by John C. Baker, Harvard Business Review, Autumn, 1942.

"Senior Executives"

Few words are so carelessly tossed about in business today as "executive," a word generally denoting an individual concerned with top management. Anyone giving even casual attention to the payments to the executive group quickly discovers that the question, "Who are executives?" is most difficult to answer. The Securities and Exchange Commission in its questionnaires leaves the answer to the individual companies submitting data. Naturally this leads to wide variation in the interpretation of the question among many different companies. An examination of the Commission's records indicates that one company reported three men as executives and another somewhat larger company listed thirty-six men. This wide discrepancy occurred when the Commission began collecting executive compensation data. At the present time, even though the range still varies widely, it can be said with some assurance that the typical listed corporation, with assets which range from fifty to one hundred fifty millions, would report ten or twelve senior officers as executives. The titles of some of these men are: Chairman of the Board, President, Executive Vice-President, Vice-President, Vice-Presidents in Charge of Sales and Production, Treasurer, Secretary, Sales Manager, Production Manager, and General Manager.

One objective of this study was to avoid a limiting definition of executives, and to induce the companies themselves to submit figures on payments to *all* the men they considered senior executives.

Statistical Data Available

The information received from these corporations made possible the study of two groups, the first composed of fourteen companies, with assets which ranged from fifty-eight to one hundred ninety-two million dollars, the second of eleven companies, with assets ranging from five to forty-six million dollars. The former for convenience in this study are designated as "large," the latter as "small" companies. Here, as in previous analyses published by the author, differences in size dictated a specific statistical treatment pattern. A separate analysis was made of the food and non-food companies to discover whether the type of industry affected the levels of payments, but no significant results were obtained. This does not necessarily mean, however, that

various industries do not have different patterns of payments; other studies indicate that they frequently do.

In requesting information from these companies it was suggested that they report total salary and supplementary payments made to their twenty-five highest-paid men and at the same time indicate the position and duties of these men. The number twenty-five was arbitrarily chosen in order to make certain that all senior officers would be included in the list. The data submitted revealed that the majority of these companies, even those in the large industries group, had twenty or fewer men whom they considered as senior executives. Among the smaller companies the total executive group usually was limited to fourteen or fewer individuals. For this reason this study will refer to the twenty top executives in the group of fourteen large companies and fourteen top executives in the group of eleven smaller companies.

The data indicated widely varying policies, not only in paying executives but also in their functions and in the plans of corporate organization. For example, one company might have a Vice-President in Charge of Purchasing, who would have authority over all the purchasing of the company. In another company there might be four or five different officers purchasing important commodities. Likewise, some companies had a Chairman of the Board while other companies did not. The job of the Chairman of the Board also varied widely. In one company this position was mainly honorary, with few duties and no power; in another company the Chairman was the most influential operating officer. One company had a Vice-President in charge of all selling, and another company had four men, responsible to the President, in charge of sales. In certain companies, functions were not those implied by specific titles. These variations presented many complications in making the analysis.

DOLLAR PAYMENTS BY "LARGE" COMPANIES

The first question arising in any discussion of executive payments is always, How much are the executives paid? Table I indicates in detail these payments to the twenty highest-paid men in the group of fourteen large companies, with median assets of $123,500,000. Column 1 indicates maximum payments, Column 2 minimum payments, and Column 3 median payments. At the

bottom appears the median payment to the *typical executive* in the entire group of companies.

TABLE I

PAYMENTS TO EXECUTIVES IN FOURTEEN "LARGE" COMPANIES (1941)

(Payments Prior to Taxes)

Executive's Rank	High	Low	Median
1st....	$195,000	$45,000	$75,000
2d...	122,258	28,800	61,250
3d	100,000	26,000	55,000
4th	85,000	25,000	46,500
5th..	75,000	25,000	32,700
6th.	70,000	25,000	32,500
7th.. .	60,000	23,686	29,400
8th...	55,000	22,000	28,740
9th	50,000	17,206	25,165
10th..	44,000	17,206	25,000
11th..	43,500	15,000	25,000
12th..	42,500	14,000	24,000
13th.....	39,500	12,900	23,000
14th....	39,000	12,000	22,480
15th....	38,000	12,000	21,000
16th.......	37,000	11,400	19,900
17th.... ...‹......	33,000	11,000	19,000
18th..	30,000	11,000	19,000
19th....	29,000	10,500	17,480
20th....	28,400	10,200	15,650

Median payment to "average" executive — $25,000

The variations in the payments between the high and low men and the relation of these to median payments, as well as the range in payments from the highest-paid man down to the twentieth man, merit careful examination. In interpreting these figures it is important to remember that the men receiving the payments were performing the usual executive functions.

One striking characteristic of these figures is the downward progression from the highest to the twentieth. The largest declines occur in figures near the top, the smallest toward the bottom of the columns, among the lower figures. The dispersion in dollar compensation at the top of each column demands careful examination.

For this group of companies the median payment to the

highest-paid man was $75,000. This was almost five times as great as the median payment to the twentieth highest-paid executive. These figures, it should be remembered, were before taxation. After taxation the picture is entirely different, the net income (based on certain assumptions, which chiefly ignore effects of non-salary income on taxes) of the highest-paid man becoming approximately three times as great as the net income of the lowest-paid man. The decline in the median figures of Column 3 was greatest at the level of the men receiving roughly $32,000, which was about twice what the lowest man typically received and fifty per cent more than the fifteenth man usually received. From the fifth highest-paid man through the twentieth no step in the decline of payments was as much as thirteen per cent.

Of equal significance is the spread between the high and low payments for the entire group. First, it should be pointed out that the maximum payment of $195,000 refers to the top payment by a company included in this group, and does not mean that other American companies during 1941 did not pay more than this; they did. Similarly, other companies in this size classification probably paid lower amounts than those here recorded. The wide range in payments among the four highest-paid men is significant. Corporate size, the industry, company policies and payment plans, all affected these amounts. An interesting point is that the relative spread between the high and low payment was fairly consistent from the fifth man through to the twentieth man. For example, the range of payments to the fifth man was from $25,000 to $75,000 and for the twentieth man $10,000 to $28,000. Thus, the highest payment to each of these individuals at various levels was roughly three times the lowest.

A final question which should be answered before leaving this table is, What does the "average" executive in this group receive? He is the "forgotten man" in most discussions of executive payments. The answer to this appears at the bottom of Table I, and indicates that $25,000 (before taxes) is the typical payment to the man who might be described as the "average executive" in the group of large companies studied.

DISTRIBUTION OF AGGREGATE PAYMENTS

The distribution of payments to the three highest-paid men, as contrasted to payments made to the other officers, is a matter of

considerable significance. Previous studies have indicated that the payment of an exceptionally large percentage to this top group often leads to discontent and low executive morale on the part of the larger group of men receiving substantially lower payments.[3]

Column 3 of Table I, indicating typical payments by this group of companies to their twenty highest-paid men, is revealing. The total of the median payments to the twenty men is $617,765, and payments to the three highest $191,250, or 30.9 per cent of payments to the entire group. All evidence from previous investigations indicates that such a division ordinarily is considered by executives themselves as equitable.

TABLE II

DISTRIBUTION OF AGGREGATE PAYMENTS TO 280 EXECUTIVES
OF FOURTEEN LARGE COMPANIES
ACCORDING TO COMPENSATION BRACKETS: 1941

Payment Brackets	Number of Executives	Per Cent of Total Number	Per Cent Total Compensation to Each Bracket
Less than $15,000........	23	8.2	2.8
15,000– 20,000........	44	15.7	7.8
20,000– 25,000........	45	16.1	10.3
25,000– 30,000........	54	19.3	15.1
30,000– 35,000........	27	9.6	9.0
35,000– 40,000........	21	7.5	8.2
40,000– 50,000........	17	6.1	8.0
50,000– 60,000........	12	4.3	6.6
60,000– 70,000........	16	5.7	10.4
70,000– 80,000........	6	2.1	4.6
80,000– 90,000........	3	1.1	2.6
90,000–100,000........	4	1.4	3.8
100,000–125,000........	5	1.8	5.7
125,000–or more........	3	1.1	5.1
	280	100.0%	100.0%

It is desirable also to summarize total dollar payments in some manner, in order to disclose the number of executives within the different compensation brackets of all reporting companies. Consequently, the information for the fourteen companies was

3. Baker, John C., *Executive Salaries and Bonus Plans*, McGraw-Hill Book Co., New York, 1938.

classified into fourteen groups by annual rates of compensation from the low of less than $15,000 to the high of $125,000 or more. The first column of Table II gives a distribution of the 280 executives in the fourteen combined companies according to the fourteen compensation brackets.

Here it will be seen that only three men in 1941 received $125,000 or more, while 54 received from $25,000 to $30,000 and 67 received $20,000 or less. Moreover, the four brackets indicating the lowest-paid officers included 59.3 per cent of the executives who received 36 per cent of the total compensation; in the four brackets including the highest-paid officers, 5.4 per cent of the executives received 17.2 per cent of the compensation.

Relation to Sales and Earnings

An examination of the dollar figures paid by a specific company or by the typical company shows only part of the picture of executive payments. For stockholders and the public to be able to appraise these figures properly it is necessary to relate such payments to sales and to earnings. The median percentage of total executive payments for the fourteen companies amounted to 0.6 per cent of net sales, and the range in the percentage of net sales paid as compensation to the twenty highest-paid men was from 0.3 per cent to 1.5 per cent.

A figure of even more significance to stockholders than that of sales is the percentage of earnings paid to the highest-paid men. In order to have a significant comparison, earnings must be defined as the net prior to executive payments. With earnings defined in this way, the typical company paid 6.5 per cent of earnings to its executives, and the range in such payments was from 2.7 per cent to 13.1 per cent.

Relation to Executive Functions

A major objective of this study was to examine payments for specific executive functions. Arranging the information submitted into comparable form for this purpose proved to be a difficult task. For example, certain companies had a Chairman of the Board, while others did not; several had an Executive Vice-President, and others did not. In one company the Chairman was the senior and highest-paid officer, while in most other companies this officer was the President. A few companies had Secretaries and Treasurers

combined, while in others the General Counsel, Treasurer and Secretary were the same officer. For this reason, it was necessary to secure all information obtainable and then to classify the officers as accurately as possible by their functions. In several companies, functions were so classified that it was impossible to include any individual in the typical picture. Even with all these difficulties, the study permitted certain conclusions to be reached.

Twelve of the fourteen companies listed a full-time paid officer as President. Range in salary payments was from $45,000 to $195,000, with the median about $68,800. Seven companies had a Chairman of the Board; the range in payments in this group was from $28,900 to $130,000, and the median was $53,400. It is doubtful if this figure has much significance, because of the widely varying responsibilities of the different Chairmen. Seven companies had officers known as Executive Vice-President, with a range in salary of $45,000 to $100,000; the median was $62,500.

Eight companies reported Vice-Presidents in charge of Sales, the range in payments being $25,000 to $71,800, and the median payment, $49,000. Eight companies had a single person in charge of Production. Seven in this group were Vice-Presidents, and the range in salary payments was from $35,000 to $75,000, with the median at $40,000. One company reported a General Manager in charge of Production with a salary approximating $37,700. Two companies had three men each in charge of different phases of production, individual salaries ranging from $21,200 to $27,900. Eight officers designated as Secretary were reported, with a salary range of $12,000 to $26,000, the median payment being $20,600.

The Treasurer proved to be the most difficult person to classify. Certain companies have a Vice-President in charge of finances and an Assistant Treasurer or Comptroller combined. Others combine the duties of Treasurer with those of Secretary, and have assistants in each department. The range in this group for ten companies was from $13,400 to $43,500, with a median at $24,500. Six payments in this group were within approximately 10 per cent of the median figure. Nine companies had an officer described as Comptroller. The range in payments was from $15,000 to $31,000, with a median at $23,700.

Eleven companies reported an officer with the title of General Counsel, or a Vice-President in charge of legal affairs. Four of these officers were Vice-Presidents and received salary amounts in the

upper half of the group. The range for the eleven companies was $18,000 to $70,000, with a median at $30,000. Nine companies had an officer in charge of research, and these salaries ranged from $10,000 to $50,000, with a median of $25,000.

Four companies reported advertising managers, who received salaries ranging from $16,700 to $47,000, with a median of $23,500. Two companies listed Vice-Presidents in charge of Public Relations, at salaries averaging $40,000. Seven companies indicated payments to traffic managers ranging from $9,800 to $37,000; the median figure was $17,000. Six companies reported purchasing executives, with a range in salary from $16,570 to $85,000. The median for this group was $45,000. The three highest-paid executives in charge of purchasing were Vice-Presidents of their respective companies.

In studying the above figures, emphasis should not be placed on median payments, because of the small number of specific payments involved. Combined with the range in the payments, however, the medians are more significant.

PAYMENTS BY "SMALLER" COMPANIES

A group of eleven companies with assets from $5,000,000 to $46,000,000 also submitted statistical data. Median assets for this group were $16,000,000. These smaller companies, as compared with the group of fourteen studied above, reported fewer officers as executives; thus it was possible to secure comparative figures for only fourteen top executives, instead of the twenty used in the study of larger companies. The figures denoting maximum, minimum, and median salaries are given in Table III, and are of interest not only in themselves but also for comparison with the fourteen larger companies.

Here again Column 1 indicates maximum payment by the group of companies to their officers, Column 2 minimum payments, and Column 3 typical or median payments. This tabulation indicates the downward progression in median, as well as maximum and minimum, figures from the highest-paid man down to the fourteenth man. These figures are less complete than might be desired, because after the ninth man the number of companies submitting data declined substantially. The largest salary declines occur between the first and second highest-paid men, the difference approximating 40 per cent to almost 50 per cent. The typica

TABLE III

PAYMENTS TO EXECUTIVES IN ELEVEN "SMALL" COMPANIES (1941)

(Payments Prior to Taxes)

Executive's Rank	High	Low	Median
1st................	$76,305	$24,750	$50,000
2d................	39,083	13,000	30,000
3d................	32,947	10,500	25,000
4th................	26,497	10,000	19,950
5th................	25,375	10,000	18,050
6th................	19,000	7,200	15,358
7th................	17,500	7,000	12,000
8th................	16,250	6,600	11,760
9th[1]......	14,083	6,000	11,325
10th[2]........	14,083	6,000	10,350
11th................	14,083	6,000	10,200
12th................	12,350	6,000	10,000
13th................	11,000	6,000	8,775
14th..	11,000	5,100	8,125

Median payment to "average" executive — $11,900

[1] Ten companies
[2] Nine companies from here through the 14th.

company, as indicated by median figures, showed substantial percentage differences in payments among the top four men, and smaller declines from that level down to the fourteenth man. The typical executive in this group received about $11,900, or approximately one-half the $25,000 paid to the typical executive in the larger companies. The spread between the typical highest-paid man in the smaller companies and the typical highest-paid man in the larger companies (Table I) is $25,000, or about one-third of the amount paid by the large companies, while the difference between the typical lowest-paid man in the smaller companies and the typical lowest-paid man in the group of larger companies is about 50 per cent. The men below the two or three highest-paid men naturally might be responsible for very different functions in the two groups of companies.

The distribution of payments to the three highest-paid men, as contrasted to total payments to other officers, both typical and by specific companies, is interesting. Column 3 of Table III, indicating typical payments, shows this distribution. Total payments to the fourteen men were $240,893; payments to the three

highest, $105,000, or 43.5 per cent of payments to the entire group. This comparison indicates that in this group a somewhat higher percentage goes to the top men than among the large companies.[4]

RELATION TO SALES AND EARNINGS

In the group of smaller companies the percentage of executive compensation to net sales varied more widely than that for the larger companies, but was in line with the conclusions indicated in previous studies. The range for these smaller companies was 0.3 per cent to 3.0 per cent, with a median of 1.1 per cent. This compares with the median percentage of of 0.6 per cent for the larger companies.

The percentage of earnings (defined, before executive compensation) paid as executive compensation also was substantially higher for the smaller than for the larger companies. The percentage of earnings paid in executive compensation by the smaller companies ranged from 5.6 per cent to 53.8 per cent, the median being 14.6 per cent; whereas in the larger companies the range was 2.7 per cent to 13.1 per cent, with a median of 6.5 per cent. Six of the smaller companies had percentages ranging from 5.6 per cent to 14.6 per cent. The chief explanation of the high percentages was low dollar earnings rather than high dollar payments.

RELATION TO FUNCTIONS

In this group the eleven officers listed as President received from $24,750 to $76,300, with a median of $50,000. Nine companies reported Treasurers with a salary range of $9,974 to $26,497, the median figure being $18,750. Eight companies listed Sales Managers, one of whom was a Vice-President. The salaries of these ranged from $8,775 to $30,000, with a median of $15,358. Seven companies had Secretaries, two of whom were Vice-Presidents. Their salaries ranged from $7,280 to $31,000, with a median of $18,161. Only one of these smaller companies reported a Chairman of the Board. His salary was listed at $18,000.

Three companies had officers in charge of public relations. One

4. In making a comparison between the percentages paid to the three highest salaried executives in the two groups, it must be remembered that the larger companies typically included twenty men in their executive group, the smaller companies only fourteen men. The larger percentage of the total executive expense paid to the three top men in the smaller group is consistent with the relationship of executive compensation to size found in previous studies.

of these men was classified as Vice-President. The salary range was from $11,700 to $21,500, the average figure being $14,400. Other officers listed were as follows: Traffic Managers, range $5,000 to $12,500; Comptrollers, $8,850 to $15,000; Research officers, $8,650 to $18,750; Purchasing officers averaged $9,920, and Advertising Managers $10,520.

The wide variations among the smaller companies in organization, job description, and responsibility tended to make this section of the study less significant than it otherwise would have been.

Summary of Conclusions

The public needs wide-spread understanding of executive payments and the contribution of executives to society. This study has specifically attempted to throw definite light on the question of how much the *typical* executive received, how much executive groups are paid, and what executives receive in different positions. All figures referred to are payments before taxes, and include both salary and other compensation.

Although this analysis is based on only a limited number of companies, these findings are considered significant. Moreover, they vary in no substantial manner from the findings in numerous similar studies made by the writer.

1. The typical executive, not the highest nor lowest-paid, received $25,000 before taxes in 1941 among the larger companies; $11,900 before taxes among the smaller companies.

2. The highest-paid man of the 280 covered in the group of larger companies received $195,000, the lowest-paid man, $10,200. Median payments for the twenty ranking executives of the fourteen individual companies ranged from $75,000 to $15,650. Corresponding figures for the smaller companies ranged from $76,300 for the highest-paid man to $5,100 to the lowest-paid. Median payments ranged from $50,000 to $8,125.

3. Aggregate payments to the executive group of the typical large company totalled $617,765. Of this amount 30.9 per cent was received by the three highest-paid. Aggregate payments to the same group of the typical smaller company were $240,893. In this case 43.5 per cent of the total payments went to the three highest-paid men.[5]

5. See footnote 4, above.

4. The relationship in 1941 between total executive payments and sales in the typical larger company was 0.6 per cent; in the typical smaller company, 1.1 per cent. Total payments to the twenty senior executives were about 6.5 per cent of earnings (prior to executive payments) in the typical large company in 1941. In the group of smaller companies the median percentage of earnings paid to the fourteen senior executives was 14.6 per cent. The relationship between total executive payments and sales and earnings in these two groups of companies typically appears moderate and indicates no need for great concern either on the part of consumers or stockholders. Percentage payments, however, in certain specific companies are far out of line and suggest the need for a careful examination of corporation policies rather than simply an examination of salaries paid.

5. Great discrepancies occurred between the practices of the large and the small companies with respect to executive functions, and the allocation of functions to particular officers was more clearly defined among the large companies. Also important was the discovery of what might be described as unorthodox grouping of duties among the officers, particularly in the smaller companies. The president, for example, might not only be the chief executive, but in addition might be treasurer, labor relations executive, production manager, and in charge of legal affairs.

It has been widely recognized that the president of a corporation generally receives the highest salary. However, little has been known of payments to other executives. This study suggests that, among the larger companies, executives in charge of purchasing may rank high, if classified as vice-presidents. Vice-presidents in charge of sales and production are also near the top of the list. Public relations men, often not classified as officers, are well paid. The relation between payments to executives and functions indicated little in the case of the smaller companies, because of the wide discrepancies in duties and responsibilities under a specific title.

If free enterprise is to continue in this country, large numbers of able young men must be attracted and retained by corporations. Such men must be tested through many years of difficult experience before reaching the top executive level and receiving the payments referred to in this study. Many never will reach these levels, but will continue to receive much smaller payments. Looking at pay-

ments to the typical executive by the typical company in both groups studied, it is difficult to see why salary payments generally in either group should be seriously criticized, or how the range among payments in the executive list could be reduced materially. Substantial financial rewards should be available as incentives for able leaders who reach key positions in business. In arriving at this conclusion the need for rewards and incentives other than monetary ones is not overlooked. They, too, must be adequate, or the type of man required to operate present-day corporations will turn to other pursuits. If adequate financial and other rewards and incentives are not furnished, economic and business historians may not only point to this period as one of controversy over executive salaries, but also as one marked by a failure to insure adequate recruiting of the leadership which is vital to private enterprise.

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THE THEORY OF ECONOMIC CHANGE

SUMMARY

Value theory and the theory of economic change, 185. — I. Preoccupation with static systems and with equilibrium, 186. — II. Assumptions of value theory lead to difficulties, 187. — Instantaneous analysis, 189. — Probability approach, 190. — Mechanism of change excluded, 192. — III. Expectations, 193. — Deriving welfare propositions, 194. — Analogy in quantum physics, 197. — The question of units, 198. — IV. Developing a theory of economic change: micro-economic vs. macro-economic conditions, 199; selection of relevant parameters, 199; projection of past performance of parameters, 200; cumulative change, 202. — Conclusions, 203.

Some of the major problems confronting economic theory involve changes in date and in the values taken by parameters. Although Veblen dealt extensively with economic process and Schumpeter developed certain important cyclical aspects of economic change,[1] concerted investigation of the theory of economic change is of relatively recent origin, dating approximately from the publication of Frisch's paper in the Cassel essays a decade ago. The studies of Keynes, Kalecki, and others during the 'thirties centered on that aspect of change relating to economic fluctuations, rather than on the elaboration of the general theory. However, the notion of fluctuations and the designation of their amplitudes as cyclical tendencies is in some respects a prejudgment of the nature of economic change. For, while upward and downward movements in industrial activity are clearly discernible, change is not merely a discontinuous (cyclical) but a consistent cumulative process as well. The cumulative process among economic phenomena is, in turn, characterized by retardations and accelerations which make it a complex rather than a mechanical formula in dealing with change. It is these elements of economic process which require study before the critical points in the development of economic structures, the striking turning points, can be more adequately dealt with.

This paper attempts to account for the somewhat tardy development of the theory of economic change in terms of limiting

1. In particular, Veblen's "The Limitations of Marginal Utility," Journal of Political Economy, Vol. 17, 1909; and Schumpeter's "The Analysis of Economic Change," Review of Economic Statistics, Vol. XVII, No. 4, May, 1934, pp. 2–10.

conditions imposed by certain aspects of modern value theory.[2] Although the latter has provided a framework for economic statics, it may not be entirely suited to the development of a theory of change. Moreover, an analysis of the limits of value theory in this respect may suggest possibilities for framing a theory of economic change.

The term *micro-economic* will be applied to the description of events relating to individual economic subjects, as in the analysis bearing on the formation of individual exchange ratios. The term *macro-economic* will be applied to events relating to aggregations of economic subjects and the magnitudes bearing on such groups.

I

Economic theory has made an effort to achieve rank as an engineering science concerned with the calculus of motivation. The treatment of the problem of allocation in terms of individualistic behavior patterns has been attended by the development of a methodology and a theory of value which sought analogues in the physical sciences, in the calculus for precision of statement of marginal increments, and in mathematics and physics for the principle of partial independence. Although this has permitted considerable refinement in techniques of analysis, it has involved preoccupation with market behavior, static systems, and with the "equilibrium" values of economic variables.[3] When disequilibrating tendencies have been considered, they have, on the whole, been regarded as an unique aspect of the general theory of fluctuations having an indeterminate bearing on disequilibrium at the level of individual exchange.[4] In those cases in which changes in param-

2. The concepts and methods deriving from the theory first presented by Pareto and developed alternately by Slutsky and Hicks and Allen.

3. "Equilibrium" values may be defined by reference to stationary conditions, such as those postulated by Frisch. At a given time t all the instantaneous forms of n variables x_t, y_t, z_t, . . . will be given through the evolution of a system, as will all the dynamic forms of the variables; the system will be in stationary equilibrium, if all derivatives are equal to zero at time t. Moreover, the equilibrium is stable, if a system tends back close to the original equilibrium after a small disturbance of initial conditions at time t. "On the Notion of Equilibrium and Disequilibrium," Review of Economic Studies, February, 1936, pp. 100–102.

4. This would seem to conceive of changes in data as disturbances or random shocks superimposed on a system, rather than as intrinsic aspects of a changing system. The former may rest on the further assumption that oscillations in economic data damp out. See Ragnar Frisch, "Propagation on Problems in Dynamic Economics," Economic Essays in Honor of Gustav Cassel.

eters have been considered, the approach has tended toward a translation of their formal dynamic characteristics to the appropriate static system.[5] Value theory has, therefore, perhaps been concerned with the classification and expansion of propositions based on assumptions initially taken as provisional and approximate.[6]

The development of economic theory on these foundations would appear to be somewhat at variance with the methodology of the sciences which served originally as models of procedure in the refinement of propositions. There is seeming consistency with the methods of the sciences in that hypotheses are precisely stated at each level of analysis. However, assumptions derived at a relatively simple stage, such as individual exchange, are on the whole retained at the more advanced analytical stages, despite the shifts in composition involved in moving from one level of analysis to another. Neither has there been, perhaps, sufficient appreciation until recently of the manner in which the properties of individual economic units resist precise formulation and of the methods employed in the sciences, particularly in quantum physics, for dealing with individual entities. Although qualifications have been made, particularly through the shift from utility to indifference curve analysis, the substance of modern analysis continues to consist of the psychological imponderables held by an economic man.

II

The difficulties encountered by economic theory in dealing with change would seem to be partly attributable to certain assumptions employed by value theory. To summarize briefly, the modern version of value theory predicates vectors of individual choice, or

5. Thus comparative statics is regarded as a special case of the general dynamic analysis; and the latter is directed toward the introduction of propositions into particular static systems corresponding to propositions derived from respective dynamic systems. Cf. Paul A. Samuelson, "The Stability of Equilibrium Comparative Statics and Dynamics," Econometrica, Vol. 9, April, 1941, pp. 97–119. Although static analysis can make use of the notion of change by "contrasting the state of affairs before equilibrium is disturbed by changes of data with the state of affairs after the economic system has reached the new equilibrium," it merely *imputes* any differences between the two states of equilibrium to the changes in data. G. von Haberler, The Theory of International Trade, p. 54.

6. Cf. Alfred Marshall, Principles of Economics, Eighth Edition, pp. 366, 461.

directions of preference or indifference, as between respective combinations of goods, which may or may not be represented by utility functions and sets of indifference surfaces. The formulation of the value problem has been characterized by a shift away from the Marshallian representation of the exchange process (quantities of a single good taken at various prices) toward the Paretian conception of exchange as a process of mutual dependence among quantities of two or more goods taken at various prices. Several important consequences have attended this modification of the theory of individual choice, particularly in its restatement by Hicks and Allen. The relationships between goods in terms of their relative positions on a scale of preferences have been emphasized; goods are substitutible for one another or complementary in correspondence with the particular kind of functional interdependence that obtains between groups of goods. Furthermore, the indeterminate character of the utility function has been recognized and incorporated into the theory of value as an intrinsic phase of the theory. Thus a given indifference curve system may be derived from any one of a number of integral expressions, in turn derived from the indifference directions of an individual. The latter yield a function representing the marginal rate of substitution of one good, X, for another good, Y, or the ratio of compensating increments in the purchases of X and Y.[7] Equilibrium is defined by equality between the marginal rate of substitution and the ratios of market prices.

These developments have led to a restatement of value theory which emphasizes the purely comparative aspects of individual exchange: the form or position of an indifference curve system is not affected in any way by the arbitrariness of the utility function; the utility levels corresponding to a set of indifference curves, and not the order of the levels, is affected; and the utility level may in

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7. Given by the differential equation $-\dfrac{dy}{dx} = R(x, y)$, to use Allen's notation, where R represents the marginal rate of substitution of X for Y. However, an integral expression, i.e. a complete set of indifference surfaces corresponding to an utility function, will generally not be available for the indifference directions of an individual with respect to purchases of more than two goods.

The Paretian approach, as well as that of Eugen Slutsky, is based on the existence of an index of utility, requiring the integrability condition and yielding a somewhat different interpretation of the substitution effect than that obtained by Hicks and Allen. Cf. R. G. D. Allen, "Professor Slutsky's Theory of Consumers' Choice," Review of Economic Studies, Vol. III, pp. 127–128. See also J. R. Hicks and R. G. D. Allen, "A Reconsideration of the Theory of Value," Econometrica, 1934.

this sense be said to increase, although again at an indeterminate rate. An unique curve system may be obtained from any number of possible integral expressions for the indifference directions of an individual. Each integral form thus comprises merely the general solution of a given equation, and therefore represents an infinite family of curves no member of which is uniquely determined.[8] It is a curve system which describes only the *possible* movements of an individual as between various combinations of two or more goods.

Moreover, the reformulation of value theory in behavioristic rather than introspective terms has in no way overcome the limitations inherent in the assumptions that individual economic subjects (1) exercise free choice in arriving at an optimum position in production and exchange, and (2) distinguish small increases in the purchases of one good, X, which compensate exactly for given small decreases in the purchase of another good, Y.[9]

We may confine ourselves to the second of these assumptions (a vast area of the literature has been devoted to the first) with the observation that preference scales are likely to shift persist-

8. Thus $\phi(x, y) = $ constant is one form of the integral, and any arbitrary function of ϕ, such as $F[\phi(x, y] = $ constant is also a form of the integral. For the various assumptions involved in attempting to restrict the arbitrariness of the integral, particularly where $U_{ij} \lessgtr 0$, see the following: Oskar Lange, "Notes on the Determinateness of the Utility Function, Part III," Review of Economic Studies, Vol. II, pp. 75–77; R. G. D. Allen, "A Note on the Determinateness of the Utility Function," Review of Economic Studies, Vol. II, 1935, pp. 155–158; Paul A. Samuelson, "Numerical Representation of Ordered Classification and the Concept of Utility," Review of Economic Studies, 1938–1939, pp. 68–70.

9. This is equivalent to the basic assumption that the individual can construct a definite, but not necessarily complete, scale of preferences for small changes in such purchases. Such an assumption would seem to be well within the boundaries of the traditional psychological approach of value theory. It involves the substitution of a market manifestation, "preference," for a given state of mind, "utility." Although modern value theory thus seeks merely to describe the vectors of motivation, rather than to explain motivation, it is none the less geared to the subjective choices and appraisals made by individuals. Thus nothing appears to have been added to the facts of observable conduct when directions of indifference are made to yield various relationships of degree which are somehow regarded as more useful than relationships of measure and whose indeterminateness is restricted by introducing rather special assumptions that imply measure rather than rank order of utilities.

ently, even over relatively short periods of time.[1] The analysis derived from the predication of preference parameters will therefore be termed *instantaneous* period analysis: preference scales will possess perfect stability for a given instant of time only, and the corresponding analysis will tend to be merely approximate for periods of time of greater duration than an instant.[2] Value theory may thus be capable of constructing an analysis applicable to extremely short periods of time (taken discretely) for each of which the indifference directions of individuals may be expressed as finite integrals of time. It should prove possible to assume all parameters as given data for each of such time periods. However, preference scales would tend to shift even over small time increments, and the consequent difference equations thus derived could hardly be combined to yield a causal pattern.

Value theory premises the individual as an unique aggregate composed of wants achieved by overcoming obstacles to their satisfaction. Underlying this structure is the postulate that a sufficient degree of regularity obtains in the system of wants, a supposition that links value theory to the assumptions of statics.[3] Although this is essentially a probability approach, modern value

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1. This is in itself an assumption, although it would seem well taken in view of the psychological make-up of individual preference scales.

2. We may represent any initial instant of time by negative infinity, $-\infty$, and refer to ensuing unit intervals of equivalent duration $t_0, t_1 \ldots t_n$. The integration of a given differential expression indicating the individual's scale of preferences for two goods may then be represented by

$$U = \int_{-\infty}^{t_n} \frac{\partial f}{\partial x} \frac{dx}{dt} dt + \int_{-\infty}^{t_n} \frac{\partial f}{\partial y} \frac{dy}{dt} dt$$

where time is introduced as a parameter and cardinal utility is assumed for notational convenience.

The integral U will approach perfect stability, k, as t approaches $-\infty$, $\lim_{t \to -\infty} U = k$ and it will possess stability in the neighborhood of $-\infty$. The assumption that a particular set of initial conditions is unique is meaningless in the absence of a causal relationship between economic variables at different points in time. That is, each time instant may define an unique set of initial conditions.

3. Thus Hicks admits the indeterminateness inherent in the scheme of wants over time, but assumes that it will be fairly slight, because of the recurrence of desire for goods purchased in the present, i.e. an expectation of future wants. Value and Capital, p. 228. Similarly, the assumption that kinks may be neglected in the curves of diminishing marginal rate of substitution is equivalent to the assumption that a sufficient degree of regularity obtains in the system of wants. Ibid., p. 23. Stability of wants is secured by the further assumption of the independence of preference scales from market prices. Ibid., p. 57.

theory would seem to be concerned primarily with an a priori probability,[4] in the sense that it merely assumes the regularity of a given system of parameters. The description of economic events in terms of a static model necessarily implies the stability of a system of parameters. A continuum is immediately derived from the static model, since the parameters under investigation at any point in time are unchanging. However, the dynamic analysis deals with the *probable* stability of parameters in terms of expectations and stabilizing factors. Thus expectations constitute the subjective probabilities attached by economic units to the future performance of parameters, such as prices; and the distinction between equilibrium and disequilibrium, between the stationary and the dynamic analysis proper, is then defined in terms of the divergence between the current and the expected values of parameters. Moreover, as the links between static and dynamic theory, expectations make possible the use of an analysis derived from statics and the application of that analysis to problems of dynamics. A reconciliation between the notion of change introduced by dynamics and the equilibrium concept may then be effected by relating expectations to the notion of changing rather than constant prices; and to the extent that expectations are not literally concerned with particular prices or wants, but more nearly akin to probability distributions, it then becomes possible to consider realized prices as deviating from expectations, without troubling greatly about disequilibrium.

Dynamics thus conceived would appear to consist of a series of temporary equilibria (imperfectly stable) corresponding to some given static equilibrium (perfectly stable). Actually an exact correspondence between the static system and the system of temporary equilibria obtains only when elasticities of expectations are

4. Several general fields of probability may be listed: (1) a mathematical theory of arrangements; (2) the frequency of actual occurrences; and (3) the psychological expectations of a participant. An a priori probability entertained by an individual economic subject represents a combination of (2) and (3), since it is drawn from the wide but unspecified experience of a participant who assumes homogeneous distribution of probabilities in a specific case. See H. Levy and L. Roth, Elements of Probability, pp. 15 et seq. The notion of a priori equal possibilities, or the homogeneous distribution of probabilities, bears a definite relationship to subjective probability. A postulate, however, is added in the case of subjective probability, namely, that "the assumption of equal chances for several events is the result of our absolute lack of knowledge." Richard von Mises, Probability, Statistics and Truth, pp. 98 ff., pp. 110–111.

zero. "Stabilizers" must consequently be introduced to render the dynamic model more realistic.[5]

Moreover, a dynamic analysis founded on statics actually excludes the mechanism of change. The notion of time as consisting of a series of short-run unit periods abstracts from change as a developmental process and from the actual lags in the relations of a system, since change is thereby taken in its more restricted and formal sense as "plans" (for outlay on consumption and production) which have been carried out to one degree or another in a period and must then be accepted, whatever their stage of completion as given data for the period following. Change will be obscured or made apparent in direct proportion to the duration of the period of time selected for analysis; and limited duration of time periods is a sine qua non of statics, if its stability assumptions are to be maintained.

Value theory may thus be characterized as that phase of economic theory which has concerned itself, to use Frisch's terminology, with variables of the same instant of time. The indifference map of an individual is comparable to a photograph, an instantaneous picture, not to a process; and the orientation of value theory would therefore seem to be intrinsically static. That is, value theory represents principles derived from the analysis of market behavior and its adjustment to changes in data and therefore presupposes the stability conditions imposed on the data pertinent to market behavior. By encompassing the institutional data which determine consumer choices, value theory has freed itself of preoccupation with data which would render impossible its use in the analysis of certain limited but highly complex economic relationships. However, the scope of value theory is limited accordingly. A knowledge of these limits would seem to be essen-

5. Hicks, op. cit., pp. 77, 127, 133, and Chapters XX, XXI, and XXII. "Stabilizers" appear to represent assumptions regarding the probability of movement or non-movement in such parameters as prices, the rate of interest and wages. That is, we know that wages or the rate of interest have at *certain* times exhibited rigidities. It would seem difficult, however, to establish the nature of the "stabilizers" and to assign more than a hypothetical meaning to the expectation elasticities of parameters, unless some reference is made to their actual performance in past time periods. This implies the utilization of a causal analysis over time, as well as a functional analysis devoted to variables of the same instant of time.

tial before methods for dealing with economic change can be developed.[6]

Once the notion of fluctuations has gained entry into economic theory, it is difficult to see what function value theory can perform in that particular branch of economics, assuming the intrusion of "realistic" assumptions which deviate from statics. Value theory may, of course, assist in confirming the fact that change has occurred, although this merely provides a starting point for investigating the mechanism of change.

This is not to say that economic theory cannot construct a dynamic analysis. It is merely to observe that the construction of such an analysis on the basis of the modern theory of value may have a predisposition for stability factors, for tendencies restoring an equilibrium, and, therefore, perhaps little concern for the irregularities as well as the cumulative movements with which a dynamic analysis must deal.

III

To summarize, expectations are subjective probabilities attached by individuals to the future performance of parameters, such as prices. The individual projects his experiences regarding the current behavior of parameters, and their actual future behavior will or will not deviate appreciably from the projection, depending on the accuracy of many individual judgments. Disequilibrium occurs when appreciable mistakes are made. The possibility of error in calculations about the future is mitigated by assumptions of regularity with respect to individual economic conduct and by the assumed effect of "stabilizers" on the future movement of parameters. In dealing with macro-economic problems the attempt has been made, notably in the case of welfare economics, to transfer the mode of analysis of value theory to the theory of economic groups. Individual calculation with respect to the future has at the same time continued to provide the basis for a dynamic analysis of macro-economic events.

A calculus of economic conduct is less concerned, however, with the movement of parameters than with the appraisal of indi-

6. For some important limitations of the scope of value theory analogous to those discussed in this paper, see W. A. Wallis and M. Friedman, "The Empirical Derivation of Indifference Functions," *Studies in Mathematical Economics and Econometrics*, pp. 175–189.

vidual reactions to, and impact on, parameters. Although the individual constitutes a significant datum, a theory constructed in terms of his conduct may encounter certain limitations, because of the nature of the data. First, there is the element of indeterminateness attaching to any study of the economic motivations and conduct of individuals. Since conduct must be inferred from its effect on events, it might perhaps be appropriate to study economic events somewhat more, and economic conduct somewhat less, intensively. Second, the concern of value theory with individual conduct may be somewhat beside the point to the extent that groups and the organized community may have superseded the individual in the performance of some economic functions. It may therefore be appropriate to define such limits as exist in attempting to apply value theory to an analysis of macro-economic conditions.

Economic theory has sometimes attempted to pass from the individual to the group by means of a "representative individual."[7] The designation of a "representative individual" would seem to involve comparison of the equilibrium positions of individuals "similarly placed." However, the principles of welfare economics have in recent years been modified on the ground that interpersonal comparisons of utility[8] are inadmissible in arriving at welfare propositions.

The difficulties encountered in attempting to derive welfare propositions by interpersonal comparison of utilities have been noted on a number of occasions.[9] A suggested method of dealing with the dilemma is the division of welfare economics into two branches. The first, relating to increases in aggregate resources, requires no interpersonal comparison of utilities, since benefits

7. A "representative individual" may be defined as one member of a group of individuals, all of whom are similarly situated. Cf. Hicks, op: cit., p. 245; Marshall, op. cit., pp. 459–460. The transition from the individual to the group is sometimes made directly and merely on the assumption that aggregate conditions may be derived from individual conditions. Cf. Hicks, "Rehabilitation of Consumers' Surplus," Review of Economic Studies, Vol. VIII, No. 2, 1941, pp. 10 ff.

8. That is, comparison of the equilibria of discrete units, assuming maximum conditions.

9. See the following: N. Kaldor, "Welfare Propositions in Economics," The Economic Journal, September, 1939, pp. 549–552; Lionel Robbins, "Interpersonal Comparisons of Utility: A Comment," The Economic Journal, December, 1938, pp. 635–691; J. R. Hicks, "The Foundations of Welfare Economics," The Economic Journal, December, 1939, pp. 696–712. The above summary is substantially a condensation of Kaldor's excellent paper.

accrue to the community as a whole. Theoretically, any losses encountered by one section of the community may be compensated out of the net gain to the community at large. The second, relating to the allocation of a given aggregate of resources, may then be considered relevant or irrelevant to the scope of welfare economics, depending on the acceptance of an assumption regarding individuals in the aggregate, namely, that all economic subjects are possessed of equal capacity for satisfaction. If the assumption is not accepted, however, nothing further need be said concerning the satisfactions of individuals; and the achievement of a desired pattern of income distribution may then be delegated to the political sphere, where its desirability may be examined in terms of political expediency, rather than on economic grounds.[1]

The inclusion in welfare propositions of the postulate of equal capacity for satisfaction as between individuals has a number of possible advantages. Above all it eliminates the dilemma present in interpersonal comparison of utilities, and renders the "representative individual" a tenable concept for analysis. However, value theory is concerned precisely with the differences in preference scales and maximum conditions that obtain between individuals. The notions of a "representative individual"[2] and of equal capacity for satisfactions obviate the analysis of variations in individual economic conduct that remains the pertinent scope of value theory.

Consumers' surplus is another method of attempting to pass from individual to aggregate conditions and, in application to welfare economics, is concerned with net gains or losses in welfare resulting from economic policy. The process of balancing gains against losses ultimately involves comparison of satisfactions, although comparison is first made in terms of amounts of money, or, in the case of consumers' surplus, in terms of commodities. However, underlying the summation of gains and losses in total welfare by the method of consumers' surplus and their conversion into

1. See particularly Kaldor, op. cit. A recent discussion by Lange presents a precise formulation of the assumptions involved in this restatement. Dr. Lange's statement is more specific concerning the "weighting" of individual utilities in arriving at total welfare deriving from a given income distribution than are other discussions of the subject. His procedure, however, is much the same. Econometrica, July-October, 1942, pp. 215–228.

2. The assumption that "the behavior of a group of individuals, or group of firms, obeys the same laws as the behavior of a single unit" is the generalized formulation of this notion. Cf. Hicks, op. cit., p. 245.

satisfactions[3] is the assumption that all individuals possess equal capacity for satisfaction with respect to money and/or commodities. Otherwise, gains and losses in utility could not be compared on a welfare basis. Thus, although consumers' surplus may conveniently refer to amounts of money or commodities gained or lost, the conversion to satisfactions gained or lost in the aggregate involves a transition from quantities of things to quantities of satisfaction.[4] If the conversion of revenue gained or lost into satisfactions is not made, that is, if aggregate gains and losses in satisfactions are not evaluated, still another dilemma arises. The basic premise of several on which the assumption of constant marginal utility is made, namely that a given change does not involve a large net change in real incomes, is unlikely to hold in the case of aggregate shifts in real incomes attendant on total welfare situations.[5] Thus restrictions apply in the case of consumers' surplus vis à vis the allocation of a given aggregate of resources as in any other attempt to pass from individual to aggregate conditions on the basis of modern value theory: (1) the behavior of the individual is not representative of that of the group, unless it is assumed that economic subjects possess equal capacity for satisfaction; and (2) in the aggregate one of the basic assumptions underlying the concept of consumers' surplus is not likely to be tenable.

Thus (1) delegation of the responsibility for social valuation of income distribution to the organized community,[6] or (2) designation of a "representative individual," or (3) the method of consumers' surplus would in each case appear to have left unanswered

3. Constancy of the marginal utility of money, or rather income, is an essential assumption in applying the method of consumers' surplus and in passing from quantities of money to quantities of satisfactions. As Hicks has pointed out, however, the transition need not be made. Cf. J. R. Hicks, "The Rehabilitation of Consumers' Surplus," Review of Economic Studies, Vol. 8, 1940–1941, p. 109.

4. This is fundamentally the procedure followed by Hotelling when he evaluates shifts in total satisfactions by multiplying the loss in individual revenue by the marginal utility of money of an individual and summing it for all individuals. "The General Welfare in Relation to Problems of Taxation, and of Railway and Utility Rates," Econometrica, Vol. 6, No. 3, July, 1938, p. 254.

5. That is, individuals are likely to adjust not only to changes in their own real income position, but to the secondary effects of changes in aggregate real incomes. For this and other assumptions entering into the concept of consumers' surplus, see Hicks, op. cit. Samuelson has indicated a number of restrictive assumptions that underlie the concept of consumers' surplus. Cf. Paul A. Samuelson, Constancy of the Marginal Utility of Income, Studies in Mathematical Economics and Econometrics, pp. 77, 87–88.

6. Cf. Lange, op. cit., p. 219.

the problem involved in passing analytically from individual to aggregate conditions.[7]

The problem of dealing with economic units has an analogy in quantum physics. Until the appearance of this branch of physics at the end of the last century, the dynamic properties of physical entities in the atomic field remained undeveloped. Quantum physics introduced the notion of change through an analysis of discontinuities among aggregates of physical entities, such as the photon, electron, and atom. The properties of individual entities were found to be indeterminate, and it was only through study in the aggregate that their probable behavior tended to agree substantially with experimental evidence. The analogy with economic units would seem to lie in the indeterminate properties of individual entities, although in one case inanimate matter is involved, and in the other psychological states.

There may, therefore, be some merit in employing in economic analysis the aggregate approach used in quantum physics for dealing with the indeterminate properties of matter. As an alternative to deriving the behavior of the economy as a whole from an individual postulated in terms of preference directions, it might thus be feasible to construct a macro-economic analysis which would deal with groups and their aggregates and refer to the probable behavior of an individual component. This might be done by using (1) units that permit of homogeneity in the analysis of non-homogeneous aggregates, and (2) relatively homogeneous economic groups. "Representative individuals" might be derived from respective groups by means of (2), and it might then be possible to indicate the behavior of the group under varying conditions by reference to the "representative individual."[8] However, aggregates constructed in terms of (2) would appear to be limited by the nature of the data. The latter consist of (a) groups of economic units from whose behavior the probable behavior of a single unit of the group may be predicated, and (b) components of an economic unit, such as preferences and wants, themselves representing probability aggregations.

7. For some of the limitations relating to the derivation of aggregate supply curves and corresponding demand curves by summation of individual curves, where markets are differentiated, see P. Sraffa, "The Laws of Returns under Competitive Conditions," The Economic Journal, December, 1926, particularly p. 546; also Marshall, op. cit., pp. 458–459.

8. That is, the probability vectors of an individual component.

In view of the possible limitations of (2), a macro-economic analysis might be developed on the basis of (1), avoiding direct concern for motivations and other psychological states. The market behavior of individuals would retain its pertinence. However, the study of market behavior is in this case shifted from an appraisal of the indeterminate psychological propensities of individuals to a more measurable basis. Furthermore, the causative aspects of economic behavior can be studied more objectively once a shift has been made from individual conduct to the analysis of conduct in the form of aggregates, such as income, employment, investment, and savings.

The question of units is particularly important in attempting to deal with the notion of economic change. Thus systems of parameters and their movement yield a basis for the formulation of probability conditions representing estimates based on the past performance of parameters, rather than private calculations by individuals about the future. Moreover, probability conditions stated in this form include the notion of change in their formulation, whereas expectations represent the process of change, insofar as they involve miscalculations about the future. There can be no provision for change, on the basis of an analysis founded on expectations, until change has occurred. Value theory, therefore, can not deal with change, since the latter is a phase of individual conduct and is made apparent ex post.[9] This is not to minimize the importance of conduct in economic affairs. Although individual behavior is a significant aspect of the economic process, the description and analysis of individual behavior does not, however, suffice as a theory concerning the operation of that process.[1]

9. Furthermore, the notion of subjective probability corresponding to the private calculation of chances would seem particularly unsuited to the study of economic change. The so-called Principle of Indifference, or the notion of equally likely chances, associated with subjective probability rests on the assumption of absolute lack of knowledge and is open to the charge, as von Mises observes, "that if we know nothing about a thing we cannot say anything about its probability." Op. cit., p. 111.

1. The study of economic change as a phase of the movement of parameters in some aggregate form has recently been attempted in considerable detail by J. Tinbergen in his Statistical Testing of Business Cycles, Vol. I: A Method and its Application to Investment Activity, and II: Business Cycles in the United States of America, 1919–1932. Although this represents primarily an appraisal by statistical methods of theories of the business cycle, it contains much that is relevant to the present discussion.

IV

The distinction between micro-economic and macro-economic conditions would seem to be the first stage in the development of a theory of economic change. This implies the selection of appropriate units and the demarcation of the limits imposed on an analysis as it proceeds from a consideration of micro-economic to macro-economic conditions.

Keynes' General Theory of Employment, Interest, and Money, is concerned with this problem in the sense that the General Theory is at many points directed at the formulation of limits. Thus, in the Keynesian analysis the postulates of the Classical school are defined as a special, limiting instance of the possible positions of equilibrium. Moreover, there is inherent in the discussion, particularly in the early chapters, a recognition of the limits attaching to the use of concepts beyond the given level of analysis for which they were intended and for which they are meaningful.[2] There is, furthermore, recognition of the shifts in composition that are introduced in the movement from individuals to groups, and consequently of the need for constructing units and concepts appropriate to the analysis corresponding to each such shift.[3] While the contribution of the General Theory to the theory of economic fluctuations has received widespread comment, the methodological assumptions which underlie the analytical structure have received relatively little attention.[4] Thus the analysis contained in the General Theory relates to macro-economic rather than micro-economic states, and dispenses with the mechanical transference of assumptions and concepts from one level of analysis to another.

A second step in establishing a theory of economic change would seem to require the selection of the relevant parameters — Tinbergen's "explanatory variables" — that take different values through time. The past performance of these parameters can then be studied by the method of multiple correlation analysis: regression coefficients can be derived by this method and tests of statistical and economic significance applied to the results.[5]

2. E.g. units of quantity applicable to the aggregate activities of all firms may not be derived from those utilized in dealing with individual firms. General Theory of Employment, Interest, and Money, pp. 40–44.

3. Ibid., pp. 10–15. This does not imply agreement with the conclusions.

4. However, see Eric Roll, A History of Economic Thought, pp. 527–528; 541.

5. Cf. J. Tinbergen, op. cit., Vol. II, pp. 9–20. Considerable analytical work has also been done by Frisch, Kalecki, Lundberg, and others.

A third step in the formulation of a theory of economic change would appear to involve a projection of the past performance of parameters expressed as a relative frequency, that is, as a probability condition or set. The latter would be essentially an extrapolation, requiring modification as parameters shifted sufficiently to alter the initial conditions defined by the set.[6] It would seem relevant to refer to general equilibrium as the initial conditions conforming to the projection of a given system of parameters, rather than as full employment of the factors of production. This would tend to avoid the use of the concept as an analogue of equilibrium in the physical sciences, an unfortunate choice of terminology in the designation of economic tendencies, because of static implications.[7] The requirements of a theory of economic change in connection with step (3) may be summarized as follows:

(*a*) The determination of the values of variables expressed as a set of initial conditions having a certain probability configuration.

(*b*) The determination of changes in the values of variables which constitute an alteration of an equilibrium and the rupture of initial conditions, rather than merely the disturbance of an equilibrium.

(*c*) Designation of the point of rupture of initial conditions as a critical or boundary point defined by a new probability configuration having new initial conditions.

There are definite limitations associated with this method of dealing with economic change, in particular those arising from

6. Following the example of Frisch, the evolution of a system of parameters may be defined in terms of given initial conditions. If at time *t* the initial conditions are altered by a shift in parameters, the evolution of the system is disturbed and its course will vary from what it would have been, had the system conformed to the original structural equations. Frisch in this context is concerned with a definition of normal or stationary equilibrium values and, therefore, with the resistance of the system to disturbance following the rupture of initial conditions. Op. cit., pp. 100–102. This has been the principal domain of analysis in economic dynamics. However, if the disturbance to initial conditions is of sufficient magnitude, it would seem feasible to view the system as changed, and to consider the point of rupture as defining its boundary conditions. The latter would constitute the initial conditions for the evolution of the system during the subsequent period of time t_1.

7. Use of the term equilibrium in theory may be equivalent to the assumption of (1) general stability of the economic structure and (2) the maintenance of that stability, despite changes affecting some parts of the structure. Although the term is ambiguous, it is employed here because of its general acceptance in economic literature.

extrapolation. Extrapolation is essentially an application of the principle of continuity in that data are assumed to change at a rate and in a direction determined by studies of past performance. Extrapolation from past experience can therefore prove to be inaccurate in predicting change insofar as the data on which an extrapolation is based have altered discontinuously in the period to which it is intended to apply.[8] In this respect extrapolation must be supplemented by the study of particular central processes conducive to economic change, which are not always open to verification or measurement by existing statistical techniques and which frequently cannot be reduced to statistical data without extreme simplification or incorrect assignment of weights. The task here is that of determining the scope of economics and of classifying data which may not lie exclusively within its domain, but which nonetheless are pertinent to the processes of economic change.

Thus it might prove possible to classify a number of discontinuous types of change without attempting to determine their precise quantitative weight in inducing change. Although such information might not be suitable for direct use in extrapolation, it could be used as a supplement to and check on extrapolation. It would seem that the necessary and sufficient conditions essential to the development of probability configurations cannot as yet be established in economics, because the economic framework, however condensed and simplified to unique constructions, comprehends many institutional aspects which rarely alter with the regularity of physical phenomena.[9] The study of central economic tendencies and their variations cannot, therefore, be expressed in exacting probability terms, although the relative frequencies of such tendencies essentially represent probability conditions. The selection and study of explanatory variables in terms of their bearing on central economic tendencies would at this stage of economic science seem to be more important than the form in which such central tendencies are expressed.

8. The use of stabilizers and other stability assumptions in value theory represent extrapolations and are open to the same criticism. The realization or disappointment of expectations represents the verification or revision of many private extrapolations.

9. Regularity does not imply that laws expressing physical relationships are absolutes; that is, the element of change is inherent in their formulation: Boyle's Law of Gases, for example, is restricted to certain limits of temperature and pressure yielding characteristic relative frequencies, or probabilities, for molecular activity.

While much of the analysis in this case will tend to be statistical, there should be considerable scope for the application of economic theory in choosing the relevant explanatory variables, in examining causal relationships among parameters requiring statistical test, and in determining the extent to which the process of change is attributable to variables drawn from institutional and non-market data.

Thus economic theory might concern itself with a study of the central tendencies giving rise to specific types of change, in an attempt to establish significant propositions suitable for testing. Moreover, a theory of economic change would have a broader scope than is implied in the term dynamics. The former would include not only an analysis of variables relating to different time periods, but, in addition, classification and analysis of types of change in relation to the variables from which they may derive, such as disturbances, shocks, cycles, stabilizers, cumulative factors within systems of parameters, and so on.[1]

The notion of cumulative change would pose a number of analytical possibilities for economic theory, and is here discussed briefly as an instance of the kind of contribution that might be made by theory. If, for example, equilibrium is defined as a given probability condition at an initial time t, then an analysis may be devoted to the study of the kinds of changes "building up" within a system of parameters and likely to alter its initial conditions. The term "building up" refers more specifically to the cumulation of certain of the unit elements in a system of parameters to a point at which their compound effect imparts a change to the system.[2]

1. Although it is possible by the method of comparative statics to impute differences between successive equilibrium states to changes in data, such a method would seem inadequate, in that many components of a new equilibrium are left undetermined and a knowledge of the process of change which may be essential in determining directions of movement ex ante remains undeveloped. However, by establishing the differences between two successive sets of initial conditions, comparative statics does indicate some of the data that have changed and to that extent might offer a starting point for the investigation and classification of types of change pertinent to economic processes.

2. Slutsky has investigated the critical points generated in the case of certain data by the accumulation of random causes. Summation in this case yielded a cyclical series equivalent for a number of cycles to a harmonic series. A system, or regime in Slutsky's terminology, altered after a number of periods, the transition to another regime ". . . occurring sometimes rather gradually sometimes more or less abruptly around certain critical points." "The Summation of Random Causes as the Source of Cyclical Processes," Econometrica, Vol. V, 1937, pp. 107-108. The moving summation inhering in the cumulation

Such a point may be defined as a critical point, the origin of new initial conditions. The unit elements of a system may be assumed to be stochastic variables.[3] Asymetrical income effects, extreme complementarity, or any persistent recurrence of a factor within a system of parameters not allowed for in establishing the initial conditions of the system would provide material for analysis. The relative importance of random or persistent cumulation might be assessed and various parameters analyzed to determine which type of cumulation predominated. Further investigation of cumulating factors might include some determination of the relative importance of factors internal and external to the system. The analysis could be confined to any given system of parameters, say particular industries, markets, income groups, and so on, or extended to include the effect on such systems of aggregate shifts in employment, investment and, finally, the effects of shifts in technology, population, and other variables, insofar as they bear on economic change.

CONCLUSIONS

Value theory appears in several respects to offer an unsatisfactory basis for a theory of economic change. (1) It sets up stabilizing assumptions with respect to individual behavior and economic parameters, and relates changes in parameters to the restoration of equilibrium conditions. Thus the notion of economic change is limited to dynamics and disequilibrium as counterparts to statics and equilibrium, respectively. (2) It deals primarily with the market conduct of individuals and with their choices and expectations. That is, the market behavior of individuals is interpreted by value theory in terms of psychological propensities whose properties remain indeterminate.

A theory of economic change would seem to require some attention to the factors yielding new equilibria or, rather, new

process is perhaps analogous to that obtaining in the case of phase-changes in a liquid as unit temperatures are varied under certain conditions, or in the case of a gas subject to unit increases in pressure, or the energy changes of a radiating atom.

3. That is, variables having certain distribution properties. This is to postulate that the assumption of identical independent distributions for n variables is *not* an essential condition in applying probability schemes to economic parameters. See Trygyve Haavelmo, "Statistical Testing of Business Cycle Theories," The Review of Economic Statistics, February, 1943, p. 14.

initial conditions, as well as to the manner in which equilibria are restored following disturbance. This would involve study of various types of change occurring within systems of economic parameters which alter the equilibrium. Equilibrium here refers to the probability configuration of a system of parameters at a specified time. An initial probability may be established by projecting the past performance of a system of parameters. The important criterion is that a theory of economic change be equipped to deal with alterations in parameters that necessitate new probability conditions.

A further requirement of a theory of economic change is a unit having some measurable properties. Expectations represent indeterminate psychological probabilities held by individuals. The notion of change is limited here to errors in the calculation of chances by individuals, and disequilibrium or change is made apparent *after* it occurs. There is thus little or no basis in this type of probability for a projection of likely changes prior to their occurrence. Aggregates, however, are independent of the random variations and indeterminateness attaching to individual units, although some problems of measurement are present. The latter appear, on the whole, to be technical problems, rather than limits set by the intrinsic character of the data.

There has been some tendency in economic theory to assume stability of the economic structure as well as of its parts. It is difficult to account for the emphasis placed on economic statics and the tardy development of a theory of economic change on any other basis. Value theory has fitted this assumption remarkably well. However, it is not actually the stability of the economic structure that may be at issue, but the stability of this or that system of parameters. The two need not be coterminus, although it is conceivable that they can be, if a number of major parameters are affected simultaneously. If they are assumed to be in every instance, there is indeed much less elasticity in the economic structure than would appear compatible with disturbances that have occurred and to which there has been some adjustment by the system. Whether or not the system remains unaltered in every respect, following adjustment, is another matter. One main function of a theory of economic change might be the more precise study of adjustments of the economic structure to a shift in some of its parts. Is an effect transmitted through a series of related parameters, is it modified or neutralized, or does it exercise an influence

in direct proportion to its initial force? These and questions of similar importance need not await the more complete development of statistical and other tools for dealing with economic change; they can be investigated through an analysis of central economic tendencies by methods already at hand.

SIDNEY MERLIN.

WASHINGTON, D. C.

UNEMPLOYMENT IN WAR-TIME BRITAIN[1]

SUMMARY

The prewar situation, 206. — British unemployment statistics, 207. — The course of unemployment, 208. — The composition of unemployment: women, 214; older workers, 217; depressed areas, 218; unemployables, 222. — Duration of unemployment, 225. — Causes and implications of the war-time record: changes in the labor supply, 227; changes in the demand for labor, 229; government control of the labor market, 231. — Conclusion, 234.

Unemployment was a grave national problem in Britain during most of the period between World Wars I and II. At no time after 1921 were there fewer than a million unemployed, and in most of the years considerably more were without work.[2] Workers who had not had a single day's employment in several years were so numerous that the "hard core" of unemployment seemed a permanent feature of British life.

It was difficult, even for optimists, to conceive of an unemployment load much under a million. Four months before World War II began, Sir Ronald Davison, an expert on the subject, placed the irreducible minimum of registered unemployment at 900,000.[3] A year later, when the impact of war was still not fully felt, other writers predicted that war-time unemployment might be reduced to the unprecedented low of 500,000, provided there was a wise use of extraordinary governmental power during the war.[4] The fact is that in the sixth year of war registered unemployment is under 100,000, and the problem of idleness has diminished to the point where unemployment statistics are published on a quarterly instead of a monthly basis. The decline in unemployment has been so gradual, and it has occurred in the midst of so many

1. The author is indebted to the Committee on Social Security of the Social Science Research Council for a grant-in-aid which made this research possible.

2. Burns, Eveline M., British Unemployment Programs, 1920–38, p. 343.

3. Times (London), April 28, 1939. The irreducible minimum was composed of 500,000 frictionally unemployed, 200,000 elderly unemployables, 100,000 youths who preferred the dole to work, and about 100,000 who registered as unemployed in order to maintain their health insurance or old age pension rights. The last-named group might be considered not truly unemployed, in spite of their appearance among the registered unemployed.

4. Clarke, R. W. B., The Economic Effort of War, p. 83, 4; Planning (PEP), No. 161, p. 8.

world-shaking events, that scant attention has been paid to its causes or to the character of the residual unemployment. How did unemployment disappear? Was reëmployment equally rapid among all sections of the unemployed? To what extent was the decline in unemployment due to circumstances which might not, or could not, exist in peace time? And what does the war-time experience suggest with regard to the definition of postwar full employment? These questions form the framework of the analysis which follows.

A prefatory note about British unemployment statistics may be useful. On one day of each month (since January, 1943, one day of each quarter) the Ministry of Labour makes a record of the number of unemployed workers registered at the employment exchanges. The figures compiled for that day constitute the unemployment total for that month, regardless of the number out of work on any other day, or the average unemployment for the month. The unemployment register need not be signed by all unemployed workers. All persons covered by unemployment insurance (the great majority of British workers) are required to register at the employment exchange when they are unemployed, but the uninsured, chiefly white-collar workers, are not compelled to do so. In addition, able-bodied workers who have been unemployed for long periods and are receiving poor relief are not included in the unemployment register. The official statistics tend, therefore, to understate slightly the actual number out of work. It is, however, the best index available, since there are no reliable statistics on unemployment among white-collar workers. The accuracy of the index increased considerably during the war, because of the shift from uninsurable to insurable work and government regulation of manpower.

Apparent inconsistencies in the unemployment figures for the same date may be due to the inclusion or exclusion of certain areas, age groups, types of unemployed, or sections of the insurance scheme. When the Ministry undertakes special unemployment analyses, the group selected for study may be only a portion of the unemployed, e.g. the wholly unemployed workers or the applicants for unemployment insurance and assistance. During the war some additional changes were made in the unemployment statistics; their net effect has been to make the totals slightly lower than they would otherwise have been. As a result of the Old Age and

Widows Pensions Act, about 40,000 women over 60 years of age ceased to be insured against unemployment in July, 1940, and thereafter were not required to register when they were unemployed. It was estimated that the unemployment register thus lost about 8,000 in that month.[5] One month later workers in government training centers were eliminated from the statistics. The decision to expand training facilities greatly and to admit employed as well as unemployed workers to training centers changed the character of government training. If the government had continued to count trainees as unemployed, the register would have shown a spurious increase, and the number of idle workers would have been grossly overstated. However, the group of trainees which had always been considered unemployed in the past (about 7,000 in July, 1940) was also omitted. This deletion is probably unavoidable, but it constitutes an artificial reduction in the figures, nonetheless. On the other hand, the extension of unemployment insurance in September, 1940, to about 400,000 non-manual workers earning from £250 to £420 a year resulted in unemployment registrations by people who had not previously been subject to the law. It is not known how many workers were thus added to the register.

THE COURSE OF UNEMPLOYMENT

When the war broke out unemployment was at a lower level than at any time in the 'thirties, largely as a result of the rearmament effort of 1939, which ended the recession of 1938 (Table I). From January to August, 1939, there was a steady decline in unemployment; the month before war began only 1,232,000 were registered as unemployed at the exchanges in Great Britain (Table II). However, the initial effect of the war was to increase unemployment. The number on the register rose sharply in the first two months of the war, followed by only a slight drop in November and December, 1939. In January, 1940, the highest unemployment figure of the war was recorded, but part of the increase was seasonal and reflected the particularly severe weather conditions on the day the count was taken. Actually, the somewhat lower total for February, 1,504,000, represents a higher amount of unemployment, when the seasonal adjustment is made. It is probable that the number of unregistered unemployed also

5. Ministry of Labour Gazette, August, 1940, p. 223.

TABLE I

AVERAGE NUMBERS ON THE REGISTERS OF EMPLOYMENT EXCHANGES
IN THE UNITED KINGDOM, 1929–1943

Year	Wholly Unemployed	Temporarily Stopped	Unemployed Casual Workers	Total
1929	900,553	268,595	79,440	1,248,588
1930 . .·	1,347,840	527,720	98,941	1,974,501
1931	1,994,471	587,719	115,678	2,697,838
1932	2,136,052	574,315	102,675	2,813,042
1933	2,037,517	456,743	94,098	2,588,358
1934	1,763,911	369,002	88,150	2,221,063
1935	1,706,783	312,757	86,581	2,106,121
1936	1,491,051	251,568	79,081	1,821,700
1937	1,284,123	205,369	67,509	1,557,001
1938	1,443,248	380,484	67,625	1,881,357
1939	1,308,212	220,990	60,599	1,589,801
1940	829,458	165,962	39,252	1,034,672
1941	314,507	62,124	14,890	391,521
1942	125,311[1]	8,615	5,346	139,272[1]
1943	93,408[1]	2,825	2,842	99,075[1]

Source: Ministry of Labour Gazette January, 1944, p 6.
[1] These figures exclude persons who were classified as unsuitable for ordinary employment.

TABLE II

REGISTERED UNEMPLOYMENT IN GREAT BRITAIN
(Men and Women Fourteen Years Old and Over, Selected Months)

Date	Number Unemployed	Date	Number Unemployed
March, 1939	1,726,929	January, 1941	695,606
August, 1939	1,231,692	February, 1941	580,849
September, 1939	1,330,928	April, 1941	410,511
October, 1939	1,430,638	June, 1941	301,939
November, 1939	1,402,588	July, 1941	277,280
December, 1939	1,361,525	October, 1941	216,199
January, 1940	1,518,896	December, 1941	188,354
February, 1940	1,504,100	January, 1942	194,848
March, 1940	1,121,213	April, 1942	155,163
June, 1940	766,835	July, 1942	132,314
July, 1940	827,266[1]	October, 1942	124,953
August, 1940	799,452	January, 1943	121,832
October, 1940	834,851	April, 1943	101,760
November, 1940	791,180	July, 1943	93,211
December, 1940	705,279	October, 1943	93,910
		January, 1944	98,975

Source: Ministry of Labour Gazette, monthly.
[1] From July, 1940, the total excludes persons receiving training in government centers or private factories. The number so excluded was about 7,000 in July, 1940.

increased markedly during the first months of war, but statistics are not available for this group.

In some ways the second World War involved a more extensive dislocation than occurred in 1914. There was relatively less unemployment in pre-1914 Britain than in the period between wars, but the outbreak of World War I created a much more serious initial disturbance than was felt in 1939 and 1940. Although Trade Union records placed unemployment at only two per cent in 1913, it was reported that "fairly widespread but not considerable unemployment" occurred during the months following the outbreak of World War I.[6] The rates of unemployment recorded under the unemployment insurance scheme can not be compared too closely with the rates recorded by the trade unions in the last war, but students of the two periods declare that the dislocation unemployment produced by the war declined less definitely and rapidly during World War II than during its predecessor.[7]

The initial impact of the new war was felt by groups which ordinarily had been most immune to unemployment. Workers in the prosperous areas (London and the Southeast), uninsured trades and consumers' industries showed the highest loss of jobs. For a few months the ·Eastern, Southern and London divisions, prosperous areas in peace time, had very high unemployment, because of defense preparations on the coast, the disruption of the vacation industry, and the curtailment of the service industries.[8] Between August, 1939, and November, 1940, unemployment increased by 28 per cent in the Eastern and Southeastern division; during the same period unemployment declined by 33 per cent in the country as a whole.[9] The Unemployment Assistance Board noted an increased number of cases in London and certain centers of "luxury industry," while the register fell in Glasgow, Birmingham, Liverpool, and Sheffield, cities which had always had a great many applicants out of work for long periods of time.[1]

The evidence points to a higher level of unemployment among uninsured persons than among insured workers, not just at the

6. Robinson, E. A. G., "Wage Policy in War-time," Economic Journal, December, 1939, pp. 643–644.
7. Report of the Unemployment Insurance Statutory Committee, December, 1939, H. C. 81, 1939–40, p. 7.
8. Economist, July 20, 1940, p. 72.
9. Economist, Trade Supplement, monthly.
1. Manchester Guardian, March 8, 1940.

beginning of the war, but through the first two years (Table III). The rise in unemployment among the uninsured was not entirely due to dislocation of jobs; new entrants to the labor market who applied for jobs at exchanges would be classified as uninsured unemployed.[2] Between May and August, 1940, there was a sharp rise in unemployment among the uninsured, while the insured jobless were finding work; this reflects the response of unoccupied people to the post-Dunkirk production drive. The extension of unemployment insurance coverage in September, 1940, to some 400,000 non-manual workers did not have much effect upon the relative volume of insured and uninsured unemployment.

TABLE III

UNEMPLOYMENT AMONG INSURED AND UNINSURED WORKERS,
14–64 YEARS OLD, IN GREAT BRITAIN

Date	(August, 1939 = 100.0) Insured on the Register	Uninsured on the Register
August, 1939......	100.0	100.0
October, 1939......	110.4	189.1
December, 1939....	107.6	147.6
February, 1940	121.5	130.2
May, 1940........	68.2	112.9
August, 1940	57.5	158.3
February, 1941	43.8	89.3
August, 1941......	18.8	61.3
August, 1942......	10.5	20.9
January, 1944.....	7.5	14.6

(Computed from Ministry of Labour Gazette, monthly)

The consumption and service industries were worst off from the very beginning, and wallpaper making, dress making, tailoring, millinery, hotel industry, and musical instruments showed the greatest losses.   Women workers were particularly affected.[3] The dislocation of foreign trade and failure of imports caused high unemployment in the tin-plate industry as well.[4] The declaration of war was itself responsible for the discharge of a great many workers. Some firms, fearing that consumers' goods and services would be drastically curtailed, reduced their staffs hastily, without

2. Ernest Brown, then Minister of Labour, declared that 86,000 of the 200,000 increase in unemployment in the first two months of war were people registering for the first time in order to secure war work. (Parliamentary Debates, House of Commons, November 22, 1939, Col. 1346, Vol. 353.)

3. Ministry of Labour Gazette, October, 1939, p. 359, 361.

4. Economist, February 3, 1940, p. 193,

waiting to discover the true situation or to place their workers in war industries. It was disclosed that large department stores, in London particularly, discharged salespeople almost wholesale, and newspapers which printed the government's appeals not to dismiss workers were themselves guilty of the same practice.[5]

The general uncertainty in the first months of war produced a decrease in industrial activity; the slight decline in unemployment during November and December, 1939, usually due to seasonal factors, was attributed wholly to the calling up of unemployed men by the armed forces and the creation of vacancies when employed men left jobs for military service.[6] Exceptionally severe weather conditions in January and February made outdoor work difficult and accentuated the normal seasonal increase in unemployment. From January to June, 1940, unemployment declined steadily, reaching a record twenty-year low of 834,000 in the latter month. The official register fluctuated around a slightly higher level from July to November, 1940, but dropped again in December to 775,000 in a contra-seasonal decline which continued through the winter months of 1941. The wider distribution of war contracts and the use of sub-contracting were credited with reducing a portion of the unemployment.

The reduction in unemployment during this period satisfied some observers, particularly those who maintained that the register was made up chiefly of workers shifting between jobs;[7] but there was considerable concern in other quarters about the failure of the register to decrease more swiftly, in view of the critical military situation and the depletion of the labor force by military conscription.[8] This viewpoint was, at times, expressed in very strong terms.[9]

5. Parliamentary Debates, House of Commons, September 28, 1939, Cols. 1457–1458, Vol. 351.

6. Economist, February 3, 1940, p. 192; Report of the Unemployment Insurance Statutory Committee, H. C. 81, 1939–40, p. 8.

7. Bulletins from Britain, October 16, 1940; Jevons, H. Stanley, The Illusion of Unemployment Figures, mimeo., no date.

8. Spectator, September 6, 1940, p. 235; Economist, October 19, 1940, p. 498.

9. The New Statesman and Nation declared: "We cannot afford any unemployment beyond the irreducible minimum of 'frictional' unemployment while workers are changing jobs. It should have been intolerable in time of peace, in war it is manifest absurdity. Workers who were too old to hope for work yesterday are no longer too old today, when there is practically no one physically fit for labour who is not, or would not be with proper organisation,

It was considered especially serious that "in spite of the reduction in the number of registered unemployed, the number of persons actually at work on the home front is still appreciably smaller than before the war."[1] A great many reasons of varying significance were offered for the failure of industry to absorb more unemployed.[2] Frequently cited as causes of lack of work were the evacuation of businesses, the curtailing of building for private purposes, the failure of imports, the northward movement of industry to escape bombing, the maldistribution of war orders between large and small firms, the diversion of shipping from port to port, the requisitioning of fishing fleets, the rationing of gasoline, the bad working conditions on airfield and army camp construction jobs, the effects of the blackout on the entertainment world, and the increased costs of production due to rising prices, air raid precaution expenses, and higher wages.

Still other explanations may be found; they center around the failure of labor supply to adjust to demand: the lack of efficiency in placement work, the absence of adequate training facilities, the shortage of skilled workers and their limited mobility, the insufficient use of low-grade workers in unskilled work, the failure to provide work for school teachers whose pupils were evacuated, the failure to counteract or dovetail seasonal employments, the preference for new recruits to industry over the long-time unemployed, the difficulty of finding work for men about to be drafted, and the reluctance of non-factory and white-collar workers to accept factory employment.

While most of these conditions disappeared as the war entered its second year, a few persisted for a longer period. In addition, changes in the military situation played havoc with employment. For example, the fall of France and entrance of Italy into the war in June, 1940, caused widespread unemployment in the export coal areas of England and Wales. The imminent threat of invasion made it necessary to clear the coastal areas of their residents and so to dislocate businesses and employment. A new factor, air-raids,

easily able to earn his keep. . . . We ought . . . to be adapting our methods of production to meet the available labour, instead of insisting that all the adaptation must come from the workers themselves."

1. *Economist*, May 11, 1940, p. 872.
2. See *Economist, Planning (PEP), Ministry of Labour Gazette; Spectator, passim*; Price, John, *Labour in the War*, p. 71; Parliamentary Debates, House of Commons, Col. 1497, Vol. 351; Col. 421, Vol. 357; Cols. 1502–1503, Vol. 357; Col. 1340, Vol. 358; Cols. 217–218, 369, Vol. 363; Col. 117, Vol. 367.

produced temporary loss of work in September, 1940, when the Blitz began. At the same time, another evacuation of women and children from the large cities began, and women's unemployment rose. The Purchase Tax, savings movement, and the restrictions on the production of consumers' goods also played a part in wiping out jobs.[3]

As the demands of the armed forces and war industry expanded and the government introduced its vigorous controls over manpower and production in the spring of 1941, unemployment ceased to be a problem of any significance.[4] At the close of a year and a half of war, only 581,000 were left on the unemployment register, and the numbers continued to decline throughout 1941, 1942 and 1943, except for a slight seasonal rise in January, 1942, and the influx of new school graduates in August, 1942. By January, 1944, when the war was in its fifth year, only 99,000 unemployed were registered in Great Britain.

The Composition of Unemployment

The prewar unemployment pattern showed a very high incidence of idleness among older workers, women, laborers, and workers in the depressed industries and areas.[5] Unemployed in these categories, moreover, tended to have the longest spells of unemployment, and many of them came to be called "unemployables." It became clear as the war went on that the special groups of unemployed would not exist when the demand for labor was great enough. But how much of the solution was due to the unique circumstances of war, which completely altered the character of labor supply and demand? For example, would the employment position of women and older workers have been as favorable if millions of highly employable young men had not been removed from the labor market by the armed forces? And would the depressed areas have recovered so completely if the government had not built new war plants there, if surplus workers had not been transferred to other regions, and if huge orders had not been placed

3. Economist, October 19, 1940, p. 498; Manchester Guardian, November 12, 1940; Scotsman, December 11, 1940.
4. A detailed discussion of the factors mentioned here will be found below, pp. 231–233.
5. Singer, H. W., Unemployment and the Unemployed, Chap. 3; Champernowne, D. G., "The Uneven Distribution of Unemployment in the United Kingdom," Review of Economic Studies, Vol. II, No. 2, pp. 93–106.

with the depressed industries — orders which at once removed the disadvantage of outmoded industrial equipment and shrinking foreign markets?

The war did not immediately result in a reduced rate of unemployment among women, older workers, or those in the depressed areas; it took almost two years for unemployment among the special groups to become insignificant. By the Spring of 1941 the total number of unemployed in Britain was declining so fast that the Ministry of Labour stopped making special statistical analyses. During the transition period, 1939–41, the special groups could be distinguished by a slower rate of decline than prevailed among all unemployed workers; in some cases this was due to a persistence of prewar conditions, while in other cases war-time exigencies were responsible. The discussion below is confined, in most cases, to the first eighteen months of war and deals with war-time unemployment among women, older workers, in the depressed areas, and the unemployables.

Women. Unemployment had been declining at a much faster rate among women than among men during the first eight months of 1939, but the declaration of war sharply reversed the trend. Not only did the number of unemployed women rise when war began, but the ratio of female to male unemployment increased markedly, particularly in 1940 and 1941, when the armed forces, rather than reëmployment, accounted for the diminishing numbers of unemployed men (Table IV). After the first month of war there were 175,000 more women and girls on the register than in August, 1939, the total having increased to 459,600; and in every month until March, 1941, the number of unemployed women was larger than in August, 1939. The increased unemployment of women was attributed to the entrance into the labor market of abnormally

TABLE IV

NUMBER OF FEMALES UNEMPLOYED PER 100 UNEMPLOYED MALES, 18–64 YEARS OLD, IN GREAT BRITAIN

Date	Number	Date	Number
January, 1939	26.4	February, 1941	84.7
August, 1939	27.1	August, 1941	82.7
October, 1939	46.3	August, 1942	32.1
March, 1940	42.0	July, 1943	36.4
October, 1940	76.9	January, 1944	44.7

(Computed from Ministry of Labour, monthly report on Employment)

large numbers of women and girls, the evacuation of working women to rural areas as a protection against air-raids, and the high proportion of women in the luxury and service industries.[6] The women displaced by these factors were not quickly absorbed by the war sector; until the manpower shortage became acute, the facilities for training women for war jobs and the provisions for using them were not well developed. In some cases the bottleneck was due to a shortage of skilled male workers, without whom the unskilled women could not be used; at times it was the failure to implement "dilution" agreements or the reluctance of employers to hire women.[7] Some of the white-collar and professional women were very slow to seek jobs in factories, because of the loss in social and business position associated with the change. When the concentration of industry program was applied to the cotton industry, many older women workers were released, and their reëmployment constituted a problem until Ernest Bevin took steps to secure jobs for the group.[8]

At the beginning of the war, women who had been unemployed for long periods were reëmployed less rapidly than men in the same position. The number of women claimants for unemployment insurance and assistance who had been on the register for a year or more changed very little between August, 1939, and January, 1940, while the male register declined sharply.[9] However, by November, 1940, the decrease in long-time unemployment among women had become conspicuous. The number of applicants for unemployment insurance and assistance who had been out of work for a year or more was about one-third lower than it had been in August, 1939, and these women constituted 5.3 per cent of all female applicants for unemployment insurance and assistance, instead of 9.7 per cent as in August, 1939.

As the war passed into its third year, women's unemployment

6. Ministry of Labour Gazette, October, 1939, p. 359, 361; Parliamentary Debates, House of Commons, November 22, 1939, Col. 1346, Vol. 353; August 15, 1940, Cols. 932, 933, Vol. 364; Manchester Guardian, September 14, 1939.

7. Economist, July 20, 1940, p. 92.

8. Johnstone, E. M., Wartime Transference of Labour in Great Britain, p. 51.

9. The number of women on the register decreased by only 2.8 per cent, while the number of men fell off by 38.7 per cent. (Ministry of Labour Gazette, February, 1940, p. 44). The decline in the male register was not, in any large measure, due to military conscription of this group. (Report of the Counselor of the American Embassy in London, February 5, 1940, unpublished).

declined more rapidly than men's. Employers became convinced that women were as good as men in many jobs, if not better, and the government's controls over the employment and discharge of all workers tended to eliminate the discriminatory treatment of women in the labor market. Finally, the men who were available for employment were, for the most part, not the most efficient workers; in fact, a sizeable group was considered unsuitable for ordinary full-time employment. While the ratio of female to male unemployment had not dropped to the prewar level even by ·January, 1944, the ratio of female to male employment had increased so greatly during four years of war that the prewar unemployment ratio no longer constitutes a fair yardstick.[1]

Older Workers. The employment difficulties of older workers are not confined to depression periods. Although they bear a disproportionate share of mass unemployment, the older workers also benefit less from economic recovery than do younger members of the labor force.[2] This trend was not affected by the fact that the economic activity created by the war was also accompanied by tremendous changes in the age structure and skills of the labor supply. During the first years of World War II the unemployment of older workers did not disappear as rapidly as that of other age groups. Unemployment among all wholly unemployed males decreased by 34 per cent between May, 1939, and March, 1940, but men of 50 years or more showed a decline of only 16 per cent.[3] In terms of the duration of unemployment, the disadvantage of the older workers was slow to disappear. Applicants for unemployment insurance and assistance who had been out of work for a year or longer were classified by age and duration of unemployment in May, 1939, and again in January, 1940. Between the two dates there was a decline of 45.8 per cent in the total number of men who had been unemployed for a year or more, but for men 55 to 64 years old the decrease was only 24.5 per cent. Similarly, in January, 1940, 11 per cent of the unemployed women in the 25 to 44 years group had been out of work for five years or more, but 20 per cent of the women from 45 to 64 years of age were in this position.

1. Civilian employment between mid-1939 and mid-1944 declined by 1,157,000 for males aged 14–64 and increased by 1,760,000 for females aged 14–59. (Computed from Cmd. 6564, Statistics Relating to the War Effort of the United Kingdom, November, 1944, pp. 3, 4.)

2. Ministry of Labour Gazette, July, 1939, p. 242.

3. Ministry of Labour Gazette, May, 1940, p. 128.

Women over 45 accounted for 56 per cent of all women out of work for a year or more and 75 per cent of those without jobs for five years or more.[4]

Members of the House of Commons complained of the discriminatory treatment of older workers, but as the period of labor stringency approached, complaints were less frequent. In July, 1940, women over 45 in London were told by the employment exchanges that they were too old to take jobs in other areas, according to the report of an M. P.[5] However, the demand for older workers rose as the needs of war industry expanded and the armed forces drained off the young men. Older workers without physical handicaps were able to secure jobs which formerly were out of their reach. Jobs which did not exist in peace time or had been filled by young boys and girls (roof spotters, fire watchers, messengers) were often filled by older men.

Depressed Areas. One of the most important causes of high unemployment throughout the 'twenties was the secular decline of the textile and coal industries. These industries were concentrated in areas which had little or no alternative employment; the depressed industries therefore gave rise to depressed areas from which people could not or would not move, and into which new industries, such few as there were, could not be attracted. Unemployment was very high in the depressed areas during the years when the national rate was rather low. In 1929 five regions had unemployment rates ranging from 12.1 per cent (in Scotland) to 19.3 per cent (in Wales), at a time when the national rate was only 10.4 per cent.[6] During the 'thirties, too, the depressed areas suffered proportionately more unemployment than the rest of the country. There was considerable movement during the decade from the depressed industries to the "sheltered" trades and services,[7] but not enough to eliminate the depressed areas.

War-time population movements and changes in the bound-

4. Ministry of Labour Gazette, February, 1940, p. 44.

5. Parliamentary Debates, House of Commons, July 11, 1940, Col. 1351, Vol. 362.

6. The other regions with high unemployment rates were the Northwestern, the Northeastern, and Northern Ireland. Northern Ireland is part of the United Kingdom, not of Great Britain, to which most of the preceding sections relate. As an important depressed area, however, Northern Ireland is included in this discussion.

7. Allen, R. G. D., "The Unemployment Situation at the Outbreak of War," Journal of the Royal Statistical Society, Part II, 1940, pp. 191–207.

aries of the areas make the available statistics on unemployment
by area less satisfactory than prewar data. It appears, neverthe-
less, that the areas which suffered the highest rates of unemploy-
ment throughout the 'thirties occupied the same position during
the first war years. The immobility characteristic of prewar
Britain did not disappear at once, in spite of the new opportunities.
For example, the islands off the west coast of Scotland reported
substantial unemployment a year after war began; the cause was
the reluctance of the islanders to move to the mainland where jobs
were available.[8] This was a very extreme case, for, in general, the
war produced a great uprooting of home-loving Britishers. The
government's decision to continue the Special Areas Act[9] until
March, 1942, indicates the persistence of unemployment in the
depressed regions. It is also significant that the public assistance
rates for 1941–42, which reflect, among other things, the volume of
long-time unemployment, were highest in the coal mining areas of
Wales, the second highest in two coal regions of England.[1] Most
important, perhaps, is the fact that the first year of war brought
very little change in the relative ranking of the high unemployment
areas. Northern Ireland continued first, followed by Wales, the
Northern division, Scotland and Wales. These areas also had high
percentages of workers unemployed for a year or more. The direct
correlation between the number of unemployed and the duration
of unemployment was clearly demonstrated in a survey made in
May, 1940. When the depressed areas were ranked for percentage
unemployed and for percentage of unemployed out of work for a
year or more, the correlation was perfect.[2] A further analysis
of the long-time unemployed indicated that the depressed areas
had the highest percentages of workers without jobs for four years
or more, as well.[3]

    8. Parliamentary Debates, House of Commons, November 19, 1940,
Col. 1810, Vol. 365.
    9. Under this Act, Special Areas Commissioners conducted programs to
rehabilitate the depressed areas. In the first ten months of 1940 the Commis-
sioners spent £13,675,000 in England and Wales and £3,300,000 in Scotland.
(Economist, December 7, 1940, p. 700).
    1. Local Government Chronicle, July 19, 1941, p. 642.
    2. Ministry of Labour Gazette, June, 1940, pp. 162,168. Northern Ireland
omitted. The depressed areas had the highest numbers without work for a
year or more in August, 1939, January, May, and November, 1940, the months
when such surveys were made.
    3. Ministry of Labour Gazette, February, 1940, pp. 43–44.

The experience of the individual depressed areas varied considerably during the war. Northern Ireland's unemployment increased between August, 1939, and November, 1940, while Wales had a small decrease and the other three areas showed fairly substantial decreases. The original unemployment in the depressed areas was so high that a substantial percentage reduction left them with a large volume of unemployment. The number of unemployed in the Northwestern division decreased by 62 per cent, while the country as a whole had a decline of 33 per cent between August, 1939, and November, 1940; yet the Northwestern division had the second highest number of unemployed in November, 1940. And Scotland had the fifth highest percentage decrease in unemployment between August, 1939, and August, 1941, but in the latter month Scotland still ranked second in volume of unemployment, just as it did in January and August, 1939.[4]

An important part of the coal industry, the mines in Wales and South Durham producing for export, suffered a setback with the collapse of its market in June, 1940. The loss of the French and Italian markets was all the more serious, because coal production and the mine labor force had been deliberately expanded in order to supply all of France's imports.[5] The large reserves of coal and the existence of unemployment among miners producing for the home market made it difficult for some time to use the export mines for domestic production, with the result that Wales and South Durham were once more depressed. A year after war began, an M. P. urged public works for unemployed miners.[6] Ernie Pyle reported in March, 1941, that "Western Wales is still in the lower brackets of depression. . . ."[7] As late as September, 1943, unemployed miners, many of them physically handicapped, were said to be a problem in South Wales and Spennymoor.[8] Yet, so difficult is it to plan in war time that the coal industry faced a serious shortage of labor from the spring of 1941 onward. It was considered a matter of grave importance to bring back all the miners who had

4. Computed from Economist, Trade Supplement, monthly, Unemployment by Regions.

5. Economist, September 14, 1940, p. 350.

6. Parliamentary Debates, House of Commons, October 10, 1940, Col. 466, Vol. 365.

7. New York World-Telegram, March 10, 1941.

8. Parliamentary Debates, House of Commons, September 24, 1943, Col. 578, Vol. 392.

left the industry through their own initiative or official transference and military draft. The need for coal during the war was so great that depressed areas in the coal regions could not exist, in the prewar sense, although the lower wages for coal miners probably made those areas feel depressed, relative to the parts of the country where war workers were concentrated.

A different type of difficulty prevented Northern Ireland from leaving the ranks of the depressed areas. The unemployment rate in the first year of the war (after which these statistics were not published) never fell below 20 per cent; it was often above that at a time when the rate for the United Kingdom was well under 10 per cent. There were actually more unemployed in Northern Ireland in October, 1940, than there had been in January, 1939. In the latter month, 95,000 registered as unemployed, and by August, 1939, only 63,000 were left on the register. The first months of war brought the total as high as 84,000 in January, 1940, and by October it reached 98,000. The situation became so serious that a Select Committee of Northern Ireland's House of Commons was appointed in October, 1940, to inquire into the nature and extent of the unemployment. The Committee's interim report disclosed that the textile industry, an important source of income for North Irelanders, had the highest rate of unemployment. This was due to the shortage of raw materials, the control of markets, the effects of the restrictions on the use of flax for woven materials, and the insufficient number of war orders placed in Northern Ireland.[9] By February, 1942, when the Committee's final report was issued, the situation had so improved that the Report concentrated on postwar employment problems. However, an M. P. from Northern Ireland continued to insist that available factory sites and labor were not being used and trained.[1]

Economic recovery was most marked and rapid in those depressed areas where new war factories were built or established industries were converted to war production. There was little or no boom in the production of peace-time products.[2] Thus, the Northwestern division had a better record than most of the other depressed areas, because aircraft factories were constructed there

9. Ministry of Labour Gazette, January, 1941, p. 12.
1. Parliamentary Debates, House of Commons, March 24, 1942, Cols. 1954-1955, Vol. 378.
2. The Limitation of Supplies Orders which seriously curtailed consumers' goods industries did not have an effect until the spring of 1940.

and many of the textile plants secured contracts from the armed forces.[3] The government's decision to earn foreign exchange by exporting textiles gave a fillip to the export sections of the industry, but there was a reversal upon the passage of the Lend-Lease Act. The need for foreign exchange diminished and textile exports were severely restricted. However, the demand for war materials was so great that no section of the textile industry was idle from 1942 on. The industry found, in fact, that its labor supply, like that of the coal industry, had to be expanded during the war. During the late 'twenties and all through the 'thirties the depressed industries lost a great many old workers and had comparatively few new entrants. As a result, the labor supply was both inadequate for war-time needs and was composed very largely of older workers.[4]

The recovery of the depressed areas is one of the happier by-products of the war. Though the revival did not occur all at once, and owed much to the movement of people out of the depressed areas, the very fact that this economic blight could be wiped out in war time will make it a prime political necessity to avoid the recurrence of depressed areas in the postwar period.

The Unemployables. Before the war a conservative estimate of the unemployables on the register alone ran to about 200,000; as late as April, 1940, Ernest Brown, then Minister of Labour, stated that 200,000 of the unemployed were not employable for reasons of age, health or locality.[5] Ernest Bevin took quite a different view of "hard-core" unemployment, and declared that ". . . . with proper treatment there is no such thing." Events seem to have borne him out. Bevin demanded that special consideration be given the least employable workers, and the bars of age, distance, skill and health were gradually lowered. Age restrictions were reduced or eliminated, the government helped workers to find and move to places where there were jobs and also provided training courses and physical rehabilitation centers. Bevin cited with approval the

3. Unpublished report of the American Consul in Manchester, June 8, 1939. The revival of textile manufacturing is indicated by a decrease in the number of women out of work for a year or more in the Northwestern and Northeastern divisions during the months August, 1939, to January, 1940. Most other areas had increased numbers of women without jobs for a year or more during this period. (Ministry of Labour Gazette, December, 1940, p. 311.)

4. At the end of 1941, the cotton textile industry was working with a labor force of which 60 per cent of the men and 40 per cent of the women were over 40 years of age. (Labor and Industry in Britain, September, 1943, p. 94.)

5. Daily Telegraph, April 4, 1940.

case of a public works contractor who agreed not to discharge any men in less than three weeks. "The result was that the number of people who had been out of work for years who had to be discharged as unfit was a very small percentage. What had happened was that three weeks had given a chance for the muscles to be developed, time for the first effect of using the body in heavy work to be got over, and better food as a result of wages to have its effect."[6]

While government assistance and intervention certainly helped the unemployables to get war-time jobs, it should be borne in mind that, except for the first World War, there had never been so fortunate a period for the disabled, sick, old, and inefficient members of the labor force. Some of the most extreme cases found employment — often, it is true, in casual or blind alley jobs, but nevertheless paid work. Vagrants, for example, were reduced from the prewar average of seven to eleven thousand to three to four thousand at the end of 1940, and hope was expressed that virtually no one would be left in the casual wards at the end of the war.[7] Large numbers of blind people were given paid work by government offices and private firms, and special provisions were made for such workers. Similarly, the government gave grants to private employers so that they might train and hire disabled workers. While some preference was given to those who were disabled as a result of war or air-raid injuries, the scheme was not limited to such individuals.[8] Disabled servicemen of World War I also found job-hunting less difficult; while 33,350 were registered as unemployed in January, 1939, there were only 12,484 on the register in August, 1940.[9]

The record of poor relief recipients was nothing short of sensational. The London County Council had 1,131 able-bodied recipients of outdoor relief in September, 1939, but there were only fifty-six left in June, 1941. In addition, many people on relief who had not been classified as able-bodied because of their age found work during the war. Even some two hundred inmates of county-supported institutions left to take jobs.[1]

There still remained a hard core of workers for whom no jobs

6. Bevin, Ernest, The War and the Workers, pamphlet, p. 10.

7. Parliamentary Debates, House of Commons, March 12, 1941, Col. 1278, Vol. 369; New York Times, March 25, 1943.

8. Ministry of Labour Gazette, November, 1942, p. 192.

9. Manchester Guardian, September 9, 1940.

1. Local Government Chronicle, August 16, 1941, p. 725.

could be found, but they did not number 200,000, or even the 85,000 Bevin expected to find in November, 1940. Ministry of Labour panels of employers and workers interviewed the unemployed in 1940 and thereafter, in order to determine how many of the registrants were truly available and able to work. Three classes were distinguished, and all three may be considered to be composed of "unemployables."[2] The total number of men classified as "unsuitable for ordinary industrial employment" and women classified as "unsuitable for normal full-time work" or "unable to transfer to other areas, although work was not available locally" never was higher then 50,000. Since the end of 1940 the number so classified has decreased gradually, so that the January, 1944 total was only slightly over 20,000. In the case of the women, the immobile ones may have found work in their own areas, when the young, mobile girls were transferred to other areas, and part-time jobs may have opened for the others. Some of the men undoubtedly found jobs in light industrial work or as roof-spotters and watchmen, particularly since the Ministry of Labour maintained a file of those who were unsuitable for ordinary industrial employment, but were entirely suitable for light jobs. However, a great many of those 30,000 men and women who went off the register between the end of 1940 and the beginning of 1944 probably stopped registering, because they no longer believed that they could get jobs.[3] The unemployables who were claimants for unemployment benefits or assistance would, of course, continue to register, since it is a condition of eligibility; it is this situation which probably explains the slow decline from month to month in the number of unemployables.[4] As benefit rights were exhausted,

2. Although Ministry of Labour spokesmen repeatedly declared that classification as "unsuitable for ordinary industrial employment" or "for normal full-time work" did not mean that the workers involved were unemployable, Ernest Bevin, himself, appeared to contradict this view. When Bevin was asked what advantage is obtained by those who have been certified as unfit and still continue to register at the employment exchanges, he replied, "Well, if I may make this confession, it is the only way I can give him a decent subsistence." (Parliamentary Debates, House of Commons, March 11, 1943, Col. 838, Vol. 387.)

3. This is indicated in a sample survey of 200 men classified as unsuitable for ordinary industrial employment who had gone off the register after their interview by the panels. Only 50 per cent were found to have jobs. Apparently, the remainder stopped registering, but had no jobs. (Ministry of Labour Gazette, January, 1941, p. 12.)

4. The percentage of unemployables who were applicants for unemployment benefits and assistance was consistently high. In January, 1944, 88.3 per

or eligibility for assistance ceased, the unemployables would stop registering.

In any case, the number of unemployables in war-time Britain has proved to be insignificant and very much lower than any of the estimates suggested. The ability of so many "unemployables" to secure and hold jobs affords perhaps the most striking illustration of the impact of the war. Since the number of men and women who are seeking work and are truly unemployable under any and all circumstances is extremely small, the term "unemployable" may be used less frequently in the future. For the war experience will always be cited as evidence that the least employable workers can work, if they are given the opportunity.

DURATION OF UNEMPLOYMENT

A general decline in unemployment usually is accompanied by a decrease in the number of long-time unemployed; however, the latter group often suffers a relative disadvantage in securing reëmployment, which makes them an increasing percentage of all unemployed workers. This situation obtained in the period January to August, 1939, when the total number without jobs decreased, but the percentage without work for a year or more increased. Nine months after the start of the war a new count was taken. Not only had the total number of unemployed declined further, but the percentage out of work for a year or more was also down. By November, 1940, the trend was more clearly outlined, for a rather slight reduction in the total number of applicants was accompanied by a substantial decrease in the percentage out of work for a year or more (Table V).

Even more noteworthy was the increasing percentage of workers unemployed for very short spells. Sixty per cent of all applicants for unemployment insurance or assistance had been out of work for less than six weeks in November, 1940, but only 44.3 per cent had been unemployed for so short a period in August,

cent of the unemployables, but only 67.6 per cent of all other unemployed persons, were applicants for insurance or assistance. If unemployment insurance is the first line of defense for members of the labor force whose employability can not be challenged, it is an interesting reflection on social policy to find that 92.9 per cent of the unemployables were insured against unemployment in January, 1944. (Computed from Ministry of Labour Gazette, February, 1944, p. 37.) A hasty glance at the statistics for other months indicates that the January, 1944, percentage is not unusually high.

TABLE V

APPLICANTS FOR UNEMPLOYMENT INSURANCE
AND UNEMPLOYMENT ALLOWANCES, 16 TO 64 YEARS OLD, GREAT BRITAIN

Date	Per Cent Whose Last Spell of Registered Unemployment Was One Year or More	Total Number of Applicants
February, 1938......	16.7	1,666,602
August, 1938........	17.4	1,613,593
May, 1939..........	20.3	1,354,812
August, 1939........	22.2	1,102,415
January, 1940.......	15.0 (approx.)	not available
May, 1940..........	16.4	742,402
November, 1940.....	10.5	646,925[1]

[1] Excludes women 60 to 64 years old, because Old Age and Widows Pensions Act, 1940, made women over 60 uninsurable against unemployment. On November 11, 1940, 2,529 women over 60 were still collecting benefits under transitional arrangements.
(Source of table: Ministry of Labour Gazette.)

1939.[5] In March, 1941, a study of all wholly unemployed women workers disclosed that one-third had been without jobs for less than four weeks, and three-fourths of the group had been idle for less than six months.[6] Further evidence of the tendency of spells of unemployment to grow shorter is found in the disbursements of the Unemployment Insurance Fund and Unemployment Assistance Board. In spite of increases in benefit and assistance rates, a broadening of the coverage of unemployment insurance, and an extension of the Assistance Board's allowances to all who were in distress because of the war, the expenditures of the Insurance and Assistance Funds decreased sharply. Since the long-time unemployed fall under the Assistance scheme, the fact that assistance payments declined relatively more than benefit outlays indicates that fewer people were out of work for long periods.

Among the truly long-time unemployed — those who had been without jobs for four or five years — the decrease was least substantial. While the number of men unemployed for a year or more decreased by 38.7 per cent between August, 1939, and January, 1940, the number without jobs for five years or more dropped by 26 per cent. Of course this percentage decrease, while smaller than that of the whole group, was quite remarkable against the record of the previous ten years. And the Ministry of Labour declared that most of the men reëmployed during this period did not become unemployed again within a short period.[7] The boom

5. Daily Telegraph, January 26, 1940.
6. Ministry of Labour Gazette, May, 1941, p. 99.
7. Ministry of Labour Gazette, February, 1940, p. 42.

in coal mining and other heavy industries at the beginning of the war gave many of the long-time unemployed their first opportunity in many years.

Causes and Implications of the War-Time Record

The disappearance of recorded unemployment during the war has made a profound impression on the British people. Almost universally, the reaction has been: "If it is possible in war time, why not in peace time?" With this sentiment there need be no quarrel. Everyone is agreed that cyclical unemployment and depressed areas are undesirable. Some people, however, have gone much further; they have projected the details of the war-time unemployment record into the postwar period and made these accomplishments their postwar objective. The war has made it seem feasible, not only to avoid business cycles and depressed areas, but to have virtually no unemployed at any time. In the speech of an M. P. in Commons this view is typified:[8]

> It is the duty of this Parliament to see and do what is necessary . . . to see that unemployment shall not return as it used to be in that awful period between 1918 and 1939. . . . Some people of the comfortable classes were content to say, "Unemployment is about normal now; there are only 1,000,000 unemployed." We must not think like that any more. We only got greatly concerned when unemployment figures rose to 2,000,000 and 3,000,000. We must be concerned to see that there is none at all. . . .

If the decrease in unemployment during the war were attributable solely to conditions which could be duplicated in peace time, there might be grounds for accepting the extraordinarily low volume of unemployment in 1943 as a yardstick for the postwar world. Actually, several other factors, apart from higher levels of output, have influenced the volume of unemployment during the war years. These factors may be reviewed under three main headings: changes in the size and composition of the labor supply, changes in the demand for labor, and government control of the labor market.

Changes in the Labor Supply. One way to reduce the number of unemployed is to reduce the size of the labor force at a time when employment opportunities are constant or increasing. In effect, this is what happened during the war. The armed forces

8. Parliamentary Debates, House of Commons, November 11, 1942, Cols. 14, 15, Vol. 385.

withdrew several million men from the labor supply, and these men were replaced rather slowly and not completely by housewives, retired workers, and juveniles.[9] Some indication of the effect of World War II on the size of the civilian labor supply may be obtained from a comparison of 1931 and 1943 figures. (1931 is used, because it was a census year, and estimates only are available for the succeeding years.) The gainfully occupied in Great Britain (including the armed forces and the unemployed) constituted 47 per cent of the population in 1931 and 50.8 per cent in 1943.[1] But when the armed forces are subtracted, only 42.2 per cent of the 1943 population was occupied, against 47.0 per cent in 1931. The needs of the armed forces are so great that Britain's civilian labor force had to be cut, even though the entire population has been mobilized as never before in history.

Under these circumstances, the dwindling unemployment figures exaggerate the expansion of employment to the extent that the total labor supply was decreased. This is particularly true in view of the fact that unemployed workers probably felt the effects of military conscription more rapidly and to a greater extent than did the employed, since the British system of industrial reservation, after May, 1940, did not defer workers, even in essential industries, if they had been unemployed for two months or more. Thus, recorded unemployment declined considerably during 1940, but there was still less employment in 1940 than in 1938.[2] In com-

9. According to the most recent information, the civilian labor force decreased sharply during the war. The gainfully occupied population (labor force and armed forces) increased by over 2 million, in spite of a decline of more than 100,000 in the population (male, 14–64, female, 14–59 years old) available for gainful occupations. The civilian labor force, however, lost almost 2.5 million members between mid-1939 and mid-1944. In these figures, two part-time workers were considered as one full-time worker, with the result that almost half a million women were excluded from the additions to the labor force.

In addition, the labor force over 64 (male) or over 59 (female) had a net increase which was greater than the normal growth. On the other hand, domestic workers were regarded as unoccupied in these statistics, with the result that domestics who transferred to war work were regarded as new additions to the labor force. On balance, the loss of 2.5 million to the civilian labor force is probably low by several hundred thousand. (Computed from Cmd. 6564, pp. 3, 4.)

1. Compton, M. and Bott, B. H., British Industry, pp. 202, 203; British Information Services, Control of Manpower in Britain, I. D. 313, p. 3.

2. Kaldor, N., "The 1941 White Paper on National Income and Expenditure," Economic Journal, Vol. 52, pp. 217–218.

paring prewar and war-time unemployment figures, some allowance should be made for the smaller war-time labor supply.

A similar allowance should be made in comparing war-time and postwar unemployment figures, since it is likely that the postwar labor supply will be larger than the war-time force, discounting the natural increase of population. It is anticipated that a great many women who never worked before the war will remain in industry, either because the wage-earner was killed or incapacitated in the war, or because the family income will need supplementation. If these women workers outnumber the men who do not return or are incapacitated, the labor supply will be larger than it was in the war and prewar periods both.

Another factor which affects the interpretation of the unemployment figures is the change in the composition of the labor supply during the war. Even if it were possible to replace all of the men withdrawn by the armed forces, it could hardly be expected that the women, older workers, and juveniles who served as replacements would equal the men in skill, experience, or strength. The effect of the substitution, therefore, was to reduce the level of skill and experience of the whole labor supply, since the characteristics which had been least desirable in the labor market were the very ones the new recruits had in great abundance. This situation, in turn, strengthened the position of the unemployed and even the "unemployables," who had previously not been able to show the average degree of skill and physical ability. Employers facing a labor market situation where a very high proportion of the available labor was female, older, unskilled, or physically handicapped had no alternative but to lower their standards and hire the long-term unemployed along with the rest. It was, therefore, not only the unprecedented demand for labor which gave the least employable unemployed their chance.

Changes in the Demand for Labor. At the same time that labor supply conditions minimized unemployment, the demand for labor underwent changes which produced a similar effect. The labor required by munitions factories was relatively unskilled; in general, unskilled workers were in greater demand during the war than in peace time. The seasonal variations which, in peace time, meant yearly spells of unemployment for many workers, were also reduced greatly during the war. The production of war materiel, of course, was free of seasonal trends, and the remaining consumers' industries

were so standardized as to style and output that seasonal influences were minimized.

Certain other conditions of production and marketing also increased the demand for labor and, in some cases, resulted in concealed unemployment. With the government as chief purchaser, the war industries were able to count on a constant stream of orders and a certain market. Moreover, the competition of ordinary industrial life was largely removed by government contracts, which were geared to getting production and not to economy. Producers could afford to hire less efficient workers and to maintain larger staffs than were ordinarily required. The tight labor market made it desirable to keep workers, particularly skilled employees, on the payroll during periods when there was no work, in order that they might be immediately available later. While the government opposed labor hoarding and took steps to end it, there is evidence that it existed, nevertheless. The Minister of Production admitted that there was idle time in the factories, and M. P.'s repeatedly cited examples of workers who were being paid, but had no work. One of the most flagrant cases was that of an airplane factory which hired three to four thousand workers and added another fifty girls each week, but at the end of a year of operation had turned out only eight or nine planes.[3] An M. P. stated flatly that in such cases in peace time "we suspend the worker, and, of course, he goes on the dole." Another M. P. asked, "is it not the case that unemployment is inside the works and is being concealed by the official figures?"[4] The precise amount of concealed unemployment can not be estimated, but there is no doubt that changes in the conditions of production due to war-time factors were responsible for keeping many people off the unemployment register who, in peace time, would have been out of work. The export industries, coal, textiles, and iron and steel, found this particularly true. These industries had very high rates of unemployment in peace time, and their war-time prosperity was almost entirely the result of the changes outlined above, plus the domestic need for their products. When the war is over these industries will once more face competition on an international scale and a probable reduction in domestic demand. There may be methods of maintaining em-

3. Parliamentary Debates, House of Commons, March 24, 1942, Col. 1925, Vol. 378.

4. Ibid., Col. 1860, Vol. 378; July 27, 1943, Col. 1359, Vol. 391.

ployment in the export industries at the war-time levels, but it is extremely doubtful whether peace-time and war-time conditions will be sufficiently similar to warrant a direct comparison of recorded unemployment.

Government Control. The government's unprecedented and complete regulation of the labor market was responsible, in no small measure, for the virtual elimination of frictional unemployment. It had been estimated, early in the war, that the number of persons out of work while changing jobs could not be reduced much below 250,000.[5] As Table II indicates, it was possible to keep recorded unemployment below a quarter of a million from August, 1941, forward. The manpower controls which contributed toward this achievement are, in the main, neither necessary nor acceptable in peace time; even at the cost of having a much higher volume of frictional unemployment in the post-war period, British workers will probably reject many of the rules and restrictions imposed on them during the war.

Only a part of British manpower policy has a bearing on the volume of frictional unemployment, so that the discussion below will present neither a chronological nor a complete survey. It will also be necessary, in some cases, to cite a minor aspect or unintentional effect of manpower legislation, rather than the major intent. Most of the measures regarding manpower were adopted from March, 1941, onward, for in the earlier periods of the war, particularly the pre-Dunkirk months, there was little government control.

One of the most important causes of frictional unemployment was incomplete information about jobs. Unemployed workers might waste several weeks tracking down vacancies which were there all the time. The employment exchanges were of no great use, because few employers notified the Ministry of Labour when they needed workers. During the war the Ministry needed to exercise much more control over jobs and workers, partly to avoid idleness due to ignorance of opportunity, but chiefly to guide the movement of workers into essential war work. In accomplishing the major objective, the Ministry also reduced frictional unemployment by bringing workers and jobs together. The increased importance of the Ministry's employment exchanges was gradually achieved. In April, 1940, the operation of the exchanges was

5. Clarke, R. W. B., The Economic Effort of War, p. 82.

roundly criticized. Applicants for unemployment benefits often had to wait as much as an hour to be waited on, and "on the side of vacancy work, the record is one of short staffs, delay and neglect. Less than thirty per cent of the jobs found by wholly unemployed persons are filled by the Labour Exchanges."[6] The situation was tremendously changed two years later, for then it was said that "most employers . . . had become rather timid about hiring any workers without first consulting an employment exchange."[7] The exchanges acquired a very high degree of control over all job vacancies through Orders which forbade employers to advertise for certain types of workers, or which required hiring to be done through an exchange. Employers were also required to notify the Ministry of Labour when any workers were laid off or quit. The government's Royal Ordnance factories naturally used the exchanges to secure a work force. Workers were brought into contact with the exchanges when they were made to register or secure jobs through the exchanges exclusively. Thus, the Restriction on Engagement Orders, the Essential Work Orders, the National Service Acts, and the Industrial Regulation Orders all compelled workers to register and, very often, to find jobs through the employment exchanges. Evacuated persons who normally were employed were required to register at the exchange in the area to which they were evacuated. Similarly, workers released as a result of the concentration of industry program and new entrants to industry were advised of openings by the employment exchanges, and, in some cases, directed to take certain jobs. Even married women were "directed" into part-time work. Aside from achieving the desired allocation of labor, these measures also reduced frictional unemployment by centralizing job-seeking and limiting movement from job to job.

Labor turnover is an important source of frictional unemployment, because, even in boom periods, workers may have several weeks of idleness while shopping around for a better job. The restrictions which have been imposed on more than eight million workers under the Essential Work Orders are probably the single most important factor in the striking reduction in recorded unemployment. Under the terms of these Orders, workers in plants

6. Economist, April 27, 1940, p. 759.
7. Johnstone, E. M., Wartime Transference of Labour in Great Britain, pp. 59, 60.

which are scheduled as "essential" can not be dismissed, except for serious misconduct, and can not leave, except with the permission of a national service officer. The accompanying safeguards of wages and conditions of work made the restrictions less onerous, but there is no doubt that the Essential Work Orders limited turnover and thus unemployment.

In addition to the foregoing controls, which were purely war measures, the government undertook to adjust labor supply to demand by methods which were familiar or acceptable in peace time. For example, a much more personal interest was taken in the unemployed than ever before. The efforts which were made to place individuals were only suitable to a period of relatively full employment, but save for the war necessity, the attempt might never have been made. Physically handicapped workers were particularly cared for; training, placement facilities, and financial assistance to employers of disabled persons were greatly expanded during the war. Training of all types, both by the government and by private employers, was available to workers on a scale which made peacetime training facilities seem insignificant. Even when account is taken of all the retraining required because of the shift from peace to war production, it is likely that workers had more opportunity to adapt themselves to available jobs by means of training courses than before the war. The fact that training allowances were converted to wages for trainees on March 31, 1941, made it possible to train large numbers of workers who otherwise would have preferred to seek work.

The government's prewar transference program was quite limited in scope and operation; during the war the program was tremendously expanded.[8] Many new types of financial assistance were provided and the grants were increased several times. Allowances were provided for travel, lodging, settling-in, clothing, moving household goods, and emergencies. For those workers who transferred and left a family behind, the government provided a continuing liability allowance, which helped pay rent, rates, mortgage interest, and storage charges. Workers were also assisted by non-financial measures, such as welfare provisions in the factory and help with housing, food, recreation and education in the new

8. The relaxation of trade union rules regarding apprenticeship and membership was an important contribution toward mobility of labor during the war.

community. Since transference was compulsory for some workers (for example, Scottish girls who were sent to the Midlands), the government's program was not only designed to encourage mobility but also to protect workers who were ordered to move. Dock workers were organized into a mobile labor force and stood ready to work in any port. This system undoubtedly reduced the number of idle days among dock workers, but whatever unemployment did occur was not registered at the employment exchanges, nor was the cost borne by the unemployment insurance fund. Regardless of the number of days they worked, dock workers received a guaranteed weekly wage. In this way, a certain amount of unemployment was concealed, but probably more was eliminated. A similar effect was achieved in other industries by pooling workers among firms, so that no idle time should exist.

CONCLUSION

On the whole, the circumstances of war were extremely favorable to a very high level of employment and an unusually low level of unemployment. The latter condition was not entirely the complement of the former, as the preceding sections have indicated. Recorded unemployment was lower than it would have been on the basis of increased industrial activity alone. The number and quality of the workers competing for jobs were lower during the war than in peace time. Seasonal unemployment declined greatly, because the great mass of workers were producing non-seasonal goods. Centralized hiring and the Essential Work Orders drastically reduced the number of "between-jobs" unemployed. The over-all conditions of war production were very favorable to the maintenance of unbroken employment. The unemployment figures failed to reflect the concealed unemployment due to guaranteed weekly wages. Finally, the government's controls over the labor market resulted in a reduction in frictional unemployment.

Since it is unlikely that government regulation will be so severe or complete after the war, and since the conditions peculiar to a war economy are not easily duplicated in peace time, it is unrealistic to expect even the most favorable postwar situation to produce as little recorded unemployment as has been registered during the war. Sir William Beveridge's Plan for Social Security suggests, as a prudent estimate, that the rate of unemployment after the war will be about ten per cent among the workers now

insured and eight and one-half per cent among the entire group he proposes to insure. On that basis, the number of unemployed would average about a million and a half.[9] To some advocates of full employment this is an admission that it can not be achieved, but many others fear that unemployment may not be kept to ten per cent. The main problems of the maintenance of a high level of industrial activity and the avoidance of depressed areas are still to be solved, and the war has only very general lessons to teach on that score. If the "depressed" industries are able to maintain a very high level of output after converting to civilian production for the home and foreign markets, there need be no depressed industries or areas at all. But Britain's export position was quite weak before the war, and the maintenance of foreign trade connections during the war has been exceedingly difficult, as the cotton industry learned after the first World War. Britain's position as a debtor nation now will intensify the problem. Since the ability of foreign countries to buy depends on their own economic prosperity, not Britain's, the industries which rely to a great extent on foreign trade may not be able to maintain very high employment levels, although other industries do so.

A depression in the export industries would not necessarily recreate the depressed areas, for the new war factories in these areas offer an opportunity to diversify industry and provide alternative employment for unemployed workers. But the success of this scheme depends on quick conversion of war plants to civilian production, maintenance of employment, no great influx of returning servicemen or war workers into the "depressed" areas, and either a transfer of some unemployed workers to other, more prosperous areas,[1] or the construction of additional new plants in the "depressed" areas. Whether some industries are depressed or not after the war, it would seem important to prevent these industries from creating desolate and stagnant areas.

Such postwar planning as has appeared indicates that the

9. Beveridge's recently published Full Employment in a Free Society sets the more optimistic minimum of three per cent, or about 500,000 unemployed. If his plan is followed, Beveridge considers this estimate "conservative rather than unduly optimistic." (Spectator, November 10, 1944, p. 426.)

1. It is significant that the Lancashire Industrial Development Council urged in July, 1940, that the government "avoid excessive and unnecessary influx into the Northwestern area of unskilled and semi-skilled labour, which at the end of the war would most likely find itself entirely without prospects of absorption into the normal local industry." (Economist, July 20, 1940, p. 99.)

war-time experience has had its influence. Official and unofficial planners show an acute awareness of Britain's postwar problem of full employment, and the related questions of foreign trade, monopolies and technological advance, which during the war has increased labor productivity greatly.[2] The emphasis in postwar planning on government control of many aspects of economic life for the purpose of maintaining full employment is born of the war-time success in many phases of the economy, including employment. While none of the specific war-time controls may be imposed on postwar Britain, and government intervention may never be as thorough as it has been during the war, the mark of the war experience will be seen in much of the thinking and action on full employment.

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2. The Government's White Paper on Employment Policy, published after this article was completed, deals extensively with these problems, which are outside the scope of this article.

RELATIVE PRICES AND POSTWAR MARKETS
FOR ANIMAL FOOD PRODUCTS

SUMMARY

I. Criticism of certain aspects of recent theorizing, 237. — II. Critical survey of some recent postwar market predictions, 240. — III. Plan for further investigation, 245. — IV. Theoretical foundation of the method used, 247. — V. Survey of statistical materials, 248. — VI. Statistical derivation of the demand function for meat, 252. — VII. Further analysis of the commodity "meat," 259. — VIII. Poultry, eggs, dairy products, and lard, 264. — IX. Predictions of demand for animal products for 1950, 271. — Conclusions, 277.

I. Criticism of Certain Aspects of Recent Theorizing

One of the most striking characteristics of recent economic thought is the extraordinary degree to which the influence of (real) income has come to be emphasized in connection with almost every problem. This emphasis, moreover, is so exclusive that one is often led to wonder why anybody should still be made to study the theory of price, cost and supply, and distribution. In those old-fashioned branches of economic reasoning, the writer seems to remember, relative prices used to play a preponderant rôle. And although he does not wish in any way to deny the great progress, especially in terms of simplification, which has been brought about by the ideas now so fashionable, he believes that the moment has come to put in a modest plea in favor of increased attention to the influence of relative prices.

The development here referred to has reached the point where relative prices of commodities, or commodity groups, are hardly ever even mentioned in discussions of "the consumption function," or "the propensity to import." The impression seems to be quite general among most writers on these subjects that to eliminate the effects of changes in the price *level* is enough to bring out the systematic, reversible relationships connecting the various aggregates (national income, consumption, total imports, and so forth).

If the endeavor of these writers were directed only toward the discovery of empirical quantitative relationships between economic magnitudes, with no further purpose, there would be no objection to their activity. But that is not the case. Such rela-

tionships are measured with the explicit intention of determining some sort of "marginal propensity" to do this or that. And "marginal propensities," i.e. the derivatives of such relationships, would in turn be without relevance unless they were analytically transformed into "multipliers." That transformation, however, is of such a nature as to make the magnitude of the "multiplier" highly sensitive to even small variations in the "marginal propensity" from which it is derived. That is why extreme caution must be used in arriving at the original function connecting the (real) national income with, say, (real) consumption. No effort should be saved, therefore, to arrive at the true *net* relationship.

It appears to the present writer that such a net relationship will, in an economic world of general interdependence, never be found to be represented by a function which contains only one independent variable. It is true, as Samuelson has said, that the income effects "are so strong that it is very difficult to find empirically the influence of price, the variable customarily related to demand by the economic theorist."[1] But mere difficulty of proving empirically the influence of a factor does not prove that it is necessarily inoperative, especially when, as Samuelson himself admits, there are good theoretical reasons to expect it to be at work. The present writer would not hesitate to quote Marshall's work as a good theoretical reason for such an expectation.

It may be, of course, that total consumption is of unit price elasticity, especially on relatively low income levels, where consumption outlay approaches income. But that possibility is not sufficient to justify the performing of analytical transformations of a highly explosive character on the derivative of functions which are based on the assumption that this possibility actually applies.[2]

1. Paul A. Samuelson, "A Statistical Analysis of the Consumption Function," printed in Alvin H. Hansen's Fiscal Policy and Business Cycles, New York, 1941, pp. 250–260.

2. The assumptions, most often tacit, or merely verbal, concerning the distribution of incomes will not again be considered. But it may be mentioned that the author was not convinced when Mr. Keynes, in answer to a criticism of the "propensity to consume" function on the ground that it could even statistically be shown to be subject to variation when the income distribution varied, merely drew attention to the fact that in the General Theory, on pp. 90–91, he had stated quite generally that the "propensity to consume" for the community as a whole "obviously depends . . . [on] the principles on which the income is divided between individuals (which may suffer modification as output is increased)." This is precisely what the writer has in mind when he

"Propensities" other than "to consume," such as, for instance, "to import," cannot even offer the argument of possible unit price elasticity as an excuse for neglecting all influences except that of the national income. Machlup, whose recent book[3] is based on the assumption (nowhere relaxed) that prices, both absolute and relative, are stable, has quite openly given the true reasons for this highly restrictive assumption: "there is little that a general theory can do about . . . [the] mess of 'possibilities'"[4] that would have to be faced in the absence of that convenient assumption. And elsewhere[5] he speaks, even more succinctly, of the "vested interest (of multiplier theory) in stable marginal propensities." By this, he means stable with respect to income itself (i.e. the vested interest is in linear relationships), as well as stable with respect to other factors (e.g. prices).

If the neglect of the effect of changes in relative prices were rigorously limited to theoretical work, with conclusions clearly labeled as inapplicable to the real world, there would be little harm in this type of economics. The results would simply fall into that already so heavily filled box marked "Partial, i.e. incomplete analysis: Never to serve economic policy." Unfortunately, however, the temptation to formulate practical advice seems to be quite overwhelming. Few ever resist it. Even Machlup, who "has no wish to encourage . . . the 'derivation' of positive policy recommendations from incomplete economic theories," cannot, in the very same paragraph, refrain from emphasizing the importance of one of his conclusions — for the period of reconstruction after the world war.[6] And it would clearly be unfair to contend that Samuelson himself, or Hansen, in whose book Samuelson's statistical study appeared, did not have economic policy in mind, to be based on the "multiplier" presented.

The present writer does not share the view that either the difficulty of proving empirically the presence of other influences (e.g. prices), or the analytical convenience of assuming them away (by the constancy assumption) offer an adequate justifica-

speaks of *merely verbal* qualifications. (See, for this controversy, Review of Economic Statistics, Vol XXI, pp. 129–130, August, 1939.)

3. Fritz Machlup, International Trade and the National Income Multiplier, Philadelphia, 1943.

4. Loc. cit., p. 205.

5. Ibid., p. 20.

6. Machlup, loc. cit., p. 214.

tion for basing advice as to policy upon incomplete analysis. By this he does not wish to deny that partial analysis is useful, or even necessary. Logically, all analysis must to some extent be the result of simplification. But he revolts at the current practice of treating the "marginal propensities" to consume, or to import, or what not, as if they were total derivatives, when in the very nature of the case they cannot but be partial derivatives. What can possibly be the value of the most beautiful, most elegant mathematical analysis, when it takes its start from such a crude confusion. Pending proof to the contrary, the author therefore believes that all the splendid work done in multiplier analysis, with all its highly inspiring conclusions, must be considered as incomplete, that is to say, as *irrelevant* to decisions affecting economic *policy*.

II. Critical Survey of Some Recent Postwar Market Predictions

The ravages which this type of reasoning in terms of a single "cause," in the face of general interdependence, has wrought in many minds are most impressively exemplified in several publications, by the Department of Commerce and the National Planning Association, which deal with postwar conditions in domestic markets, imports and exports. In linking the critical remarks in the first section of this paper to the specific publications listed in the footnote,[7] the present writer does not wish to hold the authors quoted responsible for the work of either the Department of Commerce or the National Planning Association. Nor does he wish to hold the Department of Commerce or the National Planning Association responsible for the work of those (and many other) writers. But he wishes to say that, without the example of the Keynesians,

7. S. Morris Livingston, Markets After the War, An Approach to Their Analysis, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, March, 1943.

August Maffry and Hal B. Lary, Foreign Trade After the War, Department of Commerce, Bureau of Foreign and Domestic Commerce, Economic Series No. 28, Washington, October, 1943.

The National Planning Association, Committee on International Policy, America's New Opportunities in World Trade, Planning Pamphlets, Nos. 37–38, November, 1944.

See also: Paul W. McCracken, A Hypothetical Projection of Expenditures for Commodity Groups Based on Past Relationships to Gross National Product, Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, May, 1943.

neither the Department of Commerce nor the National Planning Association would ever have proceeded, in their *statistical* work, to predict future market conditions in terms of essentially only one factor, admitting freely (as the Keynesians do) that other factors are at work, but making only .*verbal* allowance for their influence.

The studies listed attempt to predict the magnitude of postwar demand for goods of all descriptions in domestic markets, as well as the volume of United States imports and exports, both for the totals, *and* for the component elements in considerable detail. Yet, in each case, the projections are based upon the relations that existed in prewar years between the predictand and (essentially at least) one single predictor: for domestic demand, the predictor is the gross national product; for imports, the volume of industrial production; for exports, the amount of United States dollars available to foreign countries.

It may, à la rigueur, be admitted that the *total* dollar values, or volumes, for all domestic expenditures taken together, and similarly for all imports and all exports, depend, perhaps primarily, on the three predictors mentioned. But it is certainly quite absurd to suppose that the same factors are sufficient, even approximately, to determine the detailed commodity composition of trade in domestic and foreign markets. There is, first, the problem of inner consistency raised by the necessity of "raising our sights," through extrapolation up to very high levels of income, industrial production, and dollar amounts available to foreigners, which have never before been experienced, and which would presumably be required for the full employment of labor in this country. But then, there is also the problem of relative prices for whose influence merely verbal allowance has at best been made, in each of the studies quoted.[8]

The very choice of dollar balances in the hands of foreigners as the main determinant of United States exports is a good example of what follows if foreign trade (a subject the theory of which used to be but a special branch of the doctrine of relative prices) is treated as a phenomenon essentially independent of prices. Let us not insist on the lack of logical consistency involved in neglecting the influence of foreign income (or production) levels, which should determine imports (both for the total and its composition) in

8. For another example of *merely verbal* allowance, see above, footnote 2.

those countries as they are supposed to do here. That is only a relatively minor matter. But it is interesting to note that the very statement of the problem of postwar foreign trade is decisively affected by the low regard in which prices have come to be held. "The crux of the United States foreign trade problem is this," the National Planning Association writes,[9] "How can other nations be provided with dollar exchange to buy American goods and to pay for American capital invested abroad?" Is this to suggest that only the inavailability or scarcity of dollar balances accounts for Great Britain's failure to buy her chilled meat imports in this country? Or is it to deny that some reduction in American import prices, i.e. tariffs, might conceivably strengthen America's demand for foreign goods? "Imports . . . are the bottleneck of American foreign trade. Postwar exports are not a problem — the people of the world will buy from us to the extent that they can pay" (NPA, loc. cit., p. 32). It is, of course, true that this will apply in the immediate postwar period, simply because the United States will probably be the only country in that period with anything for sale. But the present writer doubts whether this kind of situation will last forever.

As for the predictions themselves, they are all presented with a vast deployment of precautionary phraseology. According to the Department of Commerce, they are "the result of purely mechanical projections. . . . They are in no sense forecasts,"[1] but merely "indications" of what may be true "under given assumptions."[2] The National Planning Association, on the other hand, characterizes its Foreign Trade Budget as "not based on mere mechanical projections of prewar relations,"[3] but rather as projections which "were modified to take cognizance of new trends and circumstances likely to change old patterns and create new ones."[4] Again, however, the Budget is "in no sense a forecast or prediction."[5]

With such sweeping general reservations to fall back on, it is easy to make verbal allowance for all kinds of "other factors" which may also play a part, and "distort" the "indications." "When 'there seemed to be no clear correlation between national

9. Loc. cit., p. 2.
1. Foreign Trade After the War, p. 19.
2. Ibid. in the preface which precedes pagination.
3. America's New Opportunities in World Trade, p. 6.
4. Ibid., p. 30.
5. Ibid., p. 6.

production and import volume," says the NPA, "other relation-
ships were used as the basis for projection," for instance, popula-
tion, or national income,[6] "whichever was found to bear closest
relation (to imports) in the past."[7] In all cases, experts were
consulted who modified the projections thus arrived at. "Past
prices and market relationships, as well as future market con-
tingencies, were considered in arriving at the import valuations
of given items. Major emphasis, however, has been given to income
relations, rather than to changes in price variations."[8] And there
follows, not very closely related apparently, the somewhat cryptic
sentence: "Variations in relative prices may, can, and will influ-
ence the volume and direction of the future trade."[8] The National
Planning Association have, verbally at least, well covered them-
selves against the objection that they did not make sufficient
allowance for the influence of relative prices. The fact remains
that, though verbally well covered, they actually did very little,
if anything, to justify their contention, implicit in the sentences
above quoted, that the income elasticity of demand for imports
in general, and for each item in particular, is greater than its price
elasticity.

While the NPA has made estimates of the physical quantities
which are, on their assumptions, likely to enter into the foreign
trade of this country, the Department of Commerce in their study
of domestic markets were only interested in dollar expenditures,
at 1942 prices, that would appear in the markets for each of some
seventy commodity groups. The results of their projections are
presented as "indications of the order of magnitude" and as "a
springboard or point of departure from which to form judgments
concerning the total effects of social, economic, technological and
wartime influences on economic activities" in the period to which
the projections refer.[9] The actual procedure followed was to corre-
late past expenditures in *current* dollars, annually for each year
1929–1940, with the dollar value, again current, of the gross
national product. Although population during this period varied by
some ten million persons, no allowance whatsoever is made for this
factor. The relations were in some cases (nearly half of the com-

6. Ibid., pp. 32–33.
7. From a letter to the author by Mr. John Miller, Assistant Director,
NPA, October 18, 1944.
8. NPA, loc. cit., p. 33.
9. A Hypothetical Projection of Expenditures etc., above quoted, p. 5.

modity or services groups considered), "improved" by the intro-
duction of "time" as a further independent variable. Only in the
case of passenger cars was expenditure explained by the intro-
duction of an additional variable (additional, that is, to the gross
national product) other than "time," namely, the additions to
the stock two years previously.

An example may be given to show what is involved in these
projections. In the case of food expenditures, the following re-
gression equation was found:

$$X_1 = 3.513 + .1727X_2 + .1193X_3.$$

where X_1 is food expenditure for the whole population in current
dollars, X_2 is the gross national product in current dollars, and X_3
is "time," measured in annual units, with 1929 as "time" 1. From
this equation, aggregate dollar expenditure for 1946, when the
gross national product is expected to be 165 billion in 1942 prices,
was estimated by giving X_2 the value 165 billion, and "time"
the value 16, yielding an aggregate dollar expenditure of 33,917
millions. In terms of the units adopted, 1946 should have the
number 18. But it was given only the value 16 because, it is ex-
plained, "the rationale for projecting a secular trend diminishes
the further the trend is projected beyond the historical period . . .
no precise mechanical conclusion on the influence of "time" [being]
possible, therefore, a middle ground position was taken. Weighing
the various reasons for time-scale adjustments, it was decided to
use 16 time units from the origin for all postwar projections in-
volving the variable "time," instead of 18 which a purely arith-
metical secular change would dictate for the year 1946."[1] The
distinction between a "purely arithmetical" projection and "a
middle ground position" being thus clarified, the writer hopes he
will be forgiven if he does not, in the remaining parts of this paper,
take any further account of the contribution that the Department
of Commerce has made to the problem of postwar markets. Let
it merely be noted that, had the estimate been for 1946 in, say,
1939 prices, the same regression equation would have yielded the
desired result. The writer does not presume to know what the
"middle ground position" would have been in the event the esti-
mates were to be made, say, for 1950.

In spite of all the reservations which surround the "projec-
tions," they are nevertheless taken seriously enough to serve as a

1. Ibid., p. 6.

basis for special articles on future foreign markets; for example, not only for organic chemicals as a whole, but also for coal-tar dyes in particular.[2] They also have been taken as a basis for estimating even the cargo space (which is, of course, highly sensitive to shifts in the commodity composition of a given total trade) which will be necessary for the expected trade volume.[3] Still more surprising, the estimates have in some cases been arrived at by extrapolating the relation between the predictand and the predictor — after elimination of certain years which did not fit the picture. This is true of the correlation between exports of organic chemicals and foreigners' dollar holdings,[4] and also applies to the domestic expenditures for "household utilities," "cigars, cigarettes, tobacco and smoking supplies," and several others.[5]

Enough has been said to show that the "projections" offered for the detailed composition of trade, domestic or otherwise, by either the Department of Commerce or the National Planning Association, are quite unwarranted. Yet the impression often is that the errors will be minimized in the totals, because all the "other influences" will somehow "cancel out." This impression, however, cannot be accepted as long as no attempt has been made to show why the "canceling out" should necessarily take place. Mere proof that things *have* canceled out in the past, does not mean that they *must* do so in the future. And if some of the elements in the total can be shown to have responded quite systematically and violently in the past to changes in some "other" factor or factors, then, no matter how perfect the fit obtained without consideration of these "other" factors, the regression equation will be too brittle to be used for projection of any sort. Mere verbal warning that other influences may be at work will not do. Further investigation of their nature and influence is called for.

III. Plan for Further Investigation

Having thus criticized a number of recent predictions of postwar conditions in domestic and foreign markets, the author feels under obligation to offer an example, at least, of alternative

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2. Foreign Commerce Weekly, March 18 and May 20, 1944.
3. Ibid., May 20, 1944.
4. Ibid., March 18, 1944. Years omitted are 1931, 1932, and 1938.
5. A Hypothetical Projection of Expenditures etc., pp. 27 and 33. Years omitted from the calculation are, in the first case, 1929 and 1930, and in the second, 1931 and 1932.

procedure. It cannot, of course, be the task of an individual to make exhaustive investigations of the type that may be expected of government departments or similar large bodies. But although limited in scope, the following investigation is nevertheless of significance in the present context. If it can be shown that relative prices are likely to play an important rôle in determining postwar demand in one fairly sizeable compartment of consumers' expenditure, they will seem likely to have influence also in other compartments. Moreover, if they affect one sector, it is by no means certain that they will affect other sectors in such a way that their effects "cancel out." There is every reason to believe that, if the parts are affected, the whole will also, *at least in principle.*

This applies, of course, both to predictions of postwar demand and to the functions from which "marginal propensities" are currently computed. If the partial "marginal propensities" are subject to price influences, the same will be true of the total "marginal propensities." And although in particular instances some sort of compensation of the price effects may indeed have taken place, that in itself is no sufficient reason to assume that this compensation always will occur. And failure to occur will affect the corresponding "multipliers" most significantly. "It is not safe," as Barone once said, "to draw, by means of analytical transformations, other laws from an empirical law obtained by interpolation, because one may in so doing end up with results completely divergent from reality."

With due apology for the inelegance and "loss of generality" involved in becoming so concrete, the special sector chosen for analysis covers the main animal products, specifically meats, poultry, lard, butter, milk and eggs. The procedure is as follows. First, non-farm demand for each product is subjected to a simple, graphical analysis in terms of real income and relative price, during the period 1923–1939. In some cases, demand would not be amenable to "explanation" except in terms of substitution relationships. Occasionally, shifts in consumers' preferences seem to have occurred. But, on the whole, prices appeared to have a great deal of influence upon the quantities purchased. In the second place, non-farm demand for the various commodities studied is estimated, assuming prewar relationships to be reëstablished after the war, under various assumptions as to postwar incomes and relative

prices. And finally, in passing, some of the implications of these findings are discussed.

IV. Theoretical Foundation of the Method Used

Let an individual consumer's demand for a given commodity (x) be dependent on his real income (r) and on the price (p) of the commodity:

$$x = F(r, p),$$

and assume the particular relationship to be $x = f(r) + \phi(p)$. If this function is common to all consumers (let there be n of them), the consumption per person will be

$$\bar{x} = \frac{\Sigma f(r)}{n} + \frac{\Sigma \phi(p)}{n}$$

Moreover, if the influence of income is linear,

$$f(r) = a + br,$$

the consumption per person becomes

$$\bar{x} = f(\bar{r}) + \frac{\Sigma \phi(p)}{n},$$

that is to say, if the individual function connecting consumption and income, $f(r)$, is linear, the average consumption equals the consumption that, according to that function, corresponds to the average income. In that case, the average income is the only parameter of the frequency distribution of incomes which needs to be taken into account.

Linearity of $f(r)$ thus becomes extremely important, in the absence of current information on the income distribution — which happens to be the case for the United States. In the event of non-linearity, higher moments of the distribution of incomes must be taken into account. If $f(r)$ is rising and concave upward, true average consumption is larger than $f(\bar{r})$; if it is rising and concave downward, average consumption will be smaller than $f(\bar{r})$.

The simple additive relation assumed between the influence of income and that of price, $\phi(p)$, is, of course, quite arbitrary. It means, in particular, that a price change will induce individual consumers to add to, or subtract from, their consumption, quite independently of their incomes. This does not mean, however, that every consumer will necessarily make the *same* adjustment in response to a given average price change. If $\phi(p)$ is the same, and also linear, for each consumer, any distribution of consumers

according to the retail price actually paid would lead to a linear price influence (i.e. demand curve) for the market as a whole, where *average* price only is taken into consideration.

This is the theoretical foundation of the method used in the demand analyses of this paper. The conclusions that follow from linearity of $f(r)$ are due to Marschak.[6] That writer also presented, in a long footnote to his review of Henry Schultz' Theory and Measurement of Demand,[7] a (non-statistical) example of an additive relationship of income and price effect upon demand. In the same place, he further suggested the use of family budget data (in preference to multiple correlation applied to time series materials) to determine the income-elasticity of demand, which, it will be seen, is the characteristic feature of the method here applied. The present writer is not certain to what extent he was influenced by Marschak's suggestions in the Economic Journal when he first applied that method in 1940-41, but he wishes to draw the reader's attention to those suggestions of Marschak's and to the fact that they were published in 1939.

V. Survey of Statistical Materials

The characteristic feature of the method employed in this paper consists in the use of family budget data from which to obtain $f(r)$, while time series are utilized for consumption, retail price, income, the cost of living, and the cost of food.

A review of the available materials made it clear that the demand studies would have to be made for the non-farm population only. The reasons are several. Retail prices and index-numbers of the cost of living and the cost of food are available for urban communities only. Urban consumption data are in most cases more reliable than figures for rural, and especially farm, consumption. It is also quite probable that the farmers' consumption of farm-produced food obeys other laws than the consumption of urban dwellers, while the question of what prices should be taken

6. Jacob Marschak, "Personal and Collective Budget Functions," Review of Economic Statistics, Vol. XXI, 1939, pp. 161–170. The present writer wrestled quite clumsily with the influence of the income distribution upon market functions in two publications: Die Analyse von Nachfragekurven in ihrer Bedeutung für die Konjunkturforschung, Bonn, 1929, and "Short-Period Variations in the Distribution of Incomes," Review of Economic Statistics, Vol. XIX, 1937, pp. 133–143.

7. The Economic Journal, Vol. XLIX, 1939, pp. 486–489.

in relation to farmer's consumption of their own produce (farm prices, or retail prices in rural or near-by urban stores) also raises difficulties. Most important of all, however, is the unavailability of adequate data on family budgets for other than urban populations.

This latter question bears directly on one of the sorest points in the field of statistical information in the United States. During 1934–1936, two important family budget investigations were undertaken. One, less ambitious, covered urban wage-earners and salaried employees. The other, called the Consumer Purchases Study, included also rural and farm sections. The sums spent for these two inquiries were quite unprecedented,[8] and yet no data have become available as a result of them to show, for the nation as a whole, the *net* influence of income on expenditure or consumption. This is due to a minor, though by no means inconsiderable, extent to the fact that the various local investigations were not undertaken simultaneously but at varying periods extending over three years (1934, 1935, and 1936) that witnessed substantial price variations. It is mainly ascribable, however, to a curious aversion which seems to have developed, in Atwater's own country, against the use of "equivalent adult male" scales, in favor of "family types." As a result, the enormous material collected in the (larger) Consumer Purchases Study has been worked out and is available only for a number of "family types." For example, family expenditure for and consumption of foodstuffs according to income are available only for a few family types (rather loosely defined) at various levels of family income. Even this, however, is the case only for certain communities (principally farm communities) investigated by the Bureau of Home Economics of the Department of Agriculture. For communities studied by the Bureau of Labor Statistics of the Department of Labor (all of them urban), food consumption is known only per family at different levels of family income, without any regard to the size of the family. Consequently, the family budget data reflect the *combined* effect of income *and* family size. For instance, the (weekly) consumption of a given foodstuff is shown on the average for all (eligible) white families in

8. This statement, though correct, may be unfair because the primary purpose in 1934–1936 was perhaps not the collection of statistical data, but the creation of budget deficits by means of WPA projects especially designed to provide money incomes for white-collar workers. In such a case, the larger the expenditure for a given result, the greater, of course, the success.

New York City and Chicago that had incomes between $1,500 and $1,999. But among the 118,000 families whose average consumption the data purport to show, there were 34,000 consisting of two adults, 44,000 consisting of two adults plus one or two persons under 16 years of age, 34,000 consisting of three to five adults plus one person under 16, and finally 5,000 families including from two adults and three persons under 16 to seven adults and one person under 16. Clearly, the average amount of any kind of food consumed by such a varied assortment of households must be affected by the fact that a given family income of, say, $1,600 represents a much higher real income for a family of *two* adults than for a household of *seven* adults *and* one child.

If, on the other hand, that average is compared with the corresponding average in other family-income classes, the facts

<center>TABLE I</center>

<center>PER CENT OF (ELIGIBLE) FAMILIES OF VARIOUS FAMILY TYPES
IN NEW YORK CITY AND CHICAGO WHOSE CONSUMPTION IS AVERAGED</center>

Family Income	Type I	Types II III	Types IV V	Types VI VII	Total
$ 500– 999.........	35.1	39.3	20.7	4.9	100.0
1000–1499.........	30.1	40.2	24.7	5.0	100.0
1500–1999.........	28.8	37.7	28.9	4.6	100.0
2000–2999.........	25.3	36.6	34.5	3.6	100.0
5000–7499.........	27.8	33.0	36.7	2.5	100.0

This table has been computed from data shown in United States Department of Labor, Bureau of Labor Statistics, Bulletin No. 648, Volume II, Family Expenditures in Selected Cities, 1935–36, Food, p. 48.

shown in Table I are found to be involved. It appears that the average family consumption at the very lowest level of family income shown relates to a group of families which contains, for instance, 35 per cent of two-person households, and 21 per cent of households with three to six persons. At the highest family income level shown in the table, the corresponding proportions are 28 to 37 per cent.

If average consumption per family of a given foodstuff is compared as between two such classes, the result will not show the influence of the difference in income alone, but that of a varied

family composition as well. Unless we assume that family income and family composition move in a certain precise relation to each other, both upward and downward — obviously quite absurd — the effect of a changing income on consumption cannot even remotely be predicted from the material as presented in the Consumer Purchases Study.[9]

For these reasons, the Consumer Purchases Study is wholly inadequate for the purpose of determining the *net* influence of income upon consumption. This defect, in at least one important respect, could have been avoided, if, in addition to the tables at present available, the raw material of the Consumer Purchases Study had been made easily accessible. Had one or two volumes, in addition to the several dozens which now give the results of that investigation, been devoted to reproducing the schedules relating to individual families (perhaps even a sample of them, say, 2,000 or 3,000), the value of the whole undertaking would have been immeasurably increased. Anyone interested could in that event have reclassified the materials for his own research purposes.[1]

9. Nevertheless, the assumption that the household (not further specified) is the appropriate consumption unit to be studied has become well established. Consumption studies undertaken in 1942 proceed by the same method. Moreover, the well-known distribution of incomes for 1935–36 computed by the National Resources Committee, which shows the frequency of "consumer units" according to income, defines a "consumer unit" as comprising all families regardless of size, and even single individuals living alone. The famous "lower," "middle," and "upper" thirds derived from that distribution, so often quoted with the implication that the "lower third" lives in "underprivileged" conditions, may, upon reëxamination of the income distribution in terms of income *per comparable unit*, turn out to contain much less than one-third of the total number of persons. If such a reëxamination should take place, with the results that this writer expects, would that entail a change in the "standards of decency?" It seems somewhat unwarranted to define norms which logically are in the nature of the "poverty line" in such a way that they become dependent on the type of consumer unit used.

1. In 1939, the present writer made exactly the suggestion mentioned in the text to persons concerned with the publication of the Consumer Purchases Study in the Department of Labor and the National Resources Committee. When told that no money was left for the publication of the extra volumes he suggested, he contacted one of the major research foundations of this country, and received the unofficial assurance that an application for funds for that purpose would be favorably considered. The present writer so informed one person in the National Resources Committee whom he had found apparently greatly interested in his suggestion and occupying what seemed to be an authoritative position in that administration. But, alas, his letter to Washington, D. C. was never even acknowledged, and nothing came of his suggestion. The loss to intelligent research in economics is incalculable.

Fortunately, the very peculiar treatment given to the Consumer Purchases Study was not applied to the other family budget investigation mentioned. That survey was undertaken, during 1934–1936, by the Bureau of Labor Statistics. It relates to "Money Disbursements of Wage Earners and Clerical Workers" in forty-two cities. The results of that study were published in a more rational form. For food, annual consumption is shown[2] per person according to annual expenditure per "equivalent adult male" (or what is practically the same thing). From other information given in the report, it is possible to translate these tables either into consumption per unit at different levels of expenditure per unit, or into consumption per person at different levels of per-person expenditure. Moreover, the translation of expenditure into income can also be made, so that in the end (it is true, only after considerable manipulation) a tolerably *net* relation between income and consumption for each major foodstuff can be derived from the published materials.

The only difficulties which cannot be overcome by appropriate adjustments are two. First, the levels of income for which consumption is shown are only three in number. Though the income range covered is fairly wide, it is unfortunately not wide enough to reach up to the high levels expected in the postwar period. The second difficulty is that the information on family budgets relates only to the urban population. As a result, the following analysis had to be limited to non-farm market reactions.

VI. STATISTICAL DERIVATION
OF THE DEMAND FUNCTION FOR MEAT

The rationale, as well as the technique, of the method used to obtain demand functions can best be shown by presenting the steps involved in one particular example, namely, meats. That "commodity" includes a number of products, each available, moreover, in a wide variety of qualities. Yet, as Marshall has pointed out, "the question where the line of division between different commodities should be drawn must be settled by convenience of the particular discussion."[3] Since, from the consumers' viewpoint,

2. See the Summary Volume, Department of Labor, Bureau of Labor Statistics Bulletin No. 638, pp. 236–241 for the tables on food consumption and expenditure.
3. Principles of Economics, eighth edition, p. 100, n.

the various sorts of meat and meat products are in close competition, they have first been analysed as a group; but since the various kinds of meat are distinctly different from the producers' point of view, an attempt has also been made to determine the "laws" that govern the internal composition of the total "commodity."[4]

The first step in the analysis calls for use of the function showing the net relationship of meat consumption to income, as well as of time series for meat consumption and (real) income. To establish the former, the family budget materials from the study of "Money Disbursements, etc."[5] have been adapted to show the connection of annual consumption per person with (annual) income per person.[6] Table II shows the available information.

TABLE II

ANNUAL CONSUMPTION OF MEATS (IN POUNDS) PER PERSON
AT VARIOUS LEVELS OF ANNUAL INCOME IN FORTY-TWO CITIES 1934–1936

Income per person	$265	$455	$721
Consumption per person:			
Beef..................	34.6	45.8	56.4
Veal...	6.6	9.3	11.5
Pork (all kinds).........	25.3	33.7	40.5
Lamb.................	5.4	10.7	13.3
Miscellaneous meats..... ..	11.5	13.0	14.7
Total.................	83.4	112.5	136.4

From these data, the function $f(r)$ has been estimated by graphical interpolation (Figure I). It will be seen that the curve

4. Since the various qualities within each major kind of meat are joint products, with essentially fixed proportions, the sub-markets for the various cuts of, say, lamb were left to take care of themselves. This principle, by the way, underlies the British system of rationing meat consumption by expenditure, the prices of various kinds and qualities being left to adjust themselves through market mechanisms.

5. All the data used are given in BLS Bulletin No. 638, pp. 236–241, already quoted.

6. It might have been preferable to use the "equivalent adult male" instead of the person as the consumption and income unit. The family budget data indeed show consumption according to total expenditure per "unit," i.e., the expenditure per "equivalent adult male" is the classification criterion. On the other hand, postwar population estimates are available only in terms of persons, and the number of "units" in the non-farm population would have had to be estimated for the period 1923–1939 which is used in our analysis. It seemed therefore expedient to use the person as a unit of consumption and of income.
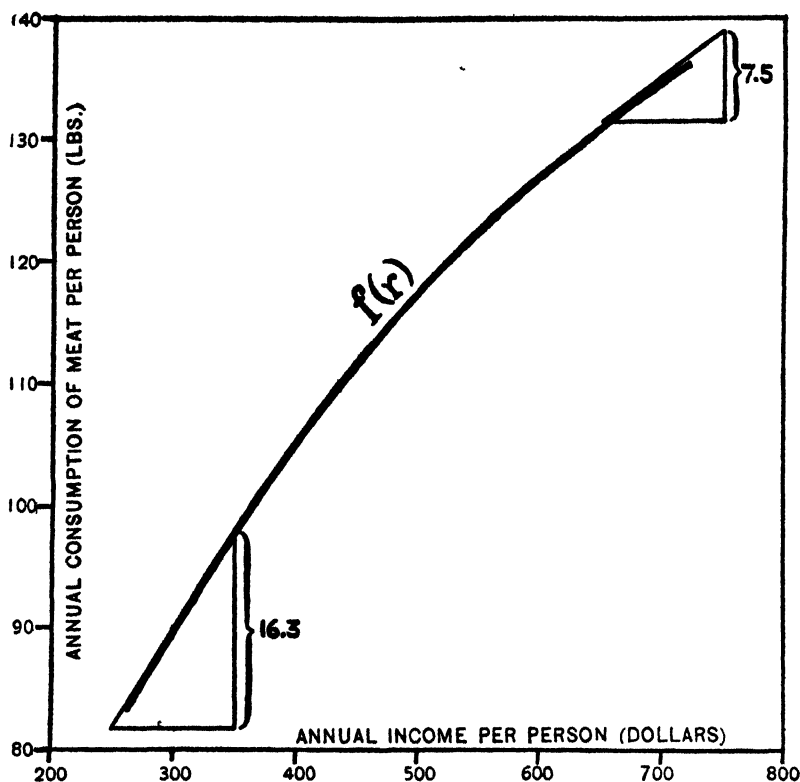
FIGURE I

does not deviate substantially from a straight line. Its slope varies
from 16.3 pounds per $100 (at the income level of $300) to 7.5
pounds per $100 (at the income level of $700). This curvature has
the effect that the consumption which, according to this function,
corresponds to the average income (which is $423 among the fami-
lies included in the inquiry) is 108 pounds whereas the true average
consumption is 103.9 pounds — a difference of about four pounds.
If annual information on the frequency distribution of incomes were
available, it would have been interesting, and might also have been
worth while, to take it into consideration. But no such information
being available, while it is certain that the shape of the frequency

distribution does change, even in the short run,[7] it seemed preferable to neglect the effect of curvature in $f(r)$. The error involved is not large and would always be in the same direction, since it is unlikely that the function will become convex downward, even above the observed range.

The time series required to show annual consumption per person not on farms was secured by taking the apparent consumption of meats (i.e. beef and veal, pork, and lamb) produced under federal inspection (carcass weight), computed per person in the non-farm population.[8]

Annual non-farm income was obtained from data prepared by the Agricultural Adjustment Administration and also reproduced in the source quoted in the last footnote. After computation per person, these data have been expressed in dollars of 1934–1936 purchasing power by means of the BLS cost-of-living index. These adjustments make the incomes for each year 1923–1939 thus secured comparable with the incomes in 1934–1936, the period of the budget inquiry.

Figure II now combines these three sets of figures. Incomes of 1934–1936 purchasing power (per person) are plotted horizontally, quantities of meat consumed (per person) in pounds are measured vertically. The curve drawn through the scatter of points (nearly a straight line between incomes $400 and $700) is the function $f(r)$

7. For a theory of such variation, see the writer's "Ability, Wages and Income," Review of Economic Statistics, Vol. XXV, 1943, pp. 77–87.

8. Figures were taken from United States Department of Agriculture, Agricultural Marketing Service, Livestock, Meats, and Wool Market Statistics and Related Data, 1940, published in May, 1941, an admirable collection of well-chosen statistics.

The procedure described involves the assumption that all meat (both fresh and processed) consumed outside of farms is federally inspected, and that none consumed on farms is. This is certainly not the case exactly, as is brought out by the fact that the per capita average thus obtained for 1934–1936 for the non-farm population yields an annual consumption of 124.0 pounds, while the total national average for the same years (calculated by dividing total population into total meat consumption, both inspected and uninspected) turns out to be 127.1 pounds, thus putting the farm consumption at 136.8 pounds. It is improbable that consumption per person on farms during 1934–1936 was so much higher than among the non-farm population. Nevertheless, there is no better way of estimating non-farm consumption. According to the (urban) family budgets, total meat consumption at an income of $550 per person (the average income level for the non-farm population in 1934–1936) was 122.7 pounds. But this agreement with the figure of 124.0 pounds above quoted is spurious, because weight is lost in retailing a given carcass weight, as well as in processing, e.g. sausages.

FIGURE III

INFLUENCE OF PRICE UPON MEAT CONSUMPTION

See text for description of price used. Vertical distance
of each point in Figure II from $f(r)$ plotted horizontally.

FIGURE II

MEAT CONSUMPTION AND INCOME

See footnote 8 (p. 255) for source of consumption figures used. Non-
agricultural money incomes are taken from information given in the same
source, recomputed per person in the non-farm population, and adjusted to
1934–1936 prices by the BLS cost-of-living index.

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interpolated through the budget data in Figure I. It shows (if curvature is neglected) the quantity of meat that would have been consumed in each of the years 1923 to 1939, if every one of the factors affecting meat consumption, except income, had remained constant throughout the period. Actual consumption deviated from $f(r)$ by varying amounts in each year. Except for 1935–1938, it was consistently larger than the corresponding values of $f(r)$.

The theoretical considerations previously presented establish the hypothesis that the principal factor responsible for these deviations is the relative price of meat. To verify this hypothesis, it is necessary to study the correlation between the relative price and the absolute deviations of the actual quantity consumed in each year from the value of $f(r)$ corresponding to the (real) income of that year. If the correlation is close enough and exhibits a negative slope, the theory may be accepted as verified.

To measure the relative (or "real") price of meat, it is necessary first to establish the money price for each year. This was done by weighting the current annual average prices in cities, as collected by the BLS (and conveniently reproduced in the collection quoted in footnote 8, page 255), according to family expenditure on each item, as known from the family budgets in 1934–1936. The retail prices (all in cents per pound) included in each year were for three types of beef, pork chops, ham, and leg of lamb.[9] The "deflation" was done by means of the BLS index-number of the cost of food, after it had been recomputed so as to make the average 1934–36 equal to unity. As a result, the relative price used expresses the amount of food in general (measured in cents of 1934–1936 purchasing power over food) which a consumer in each year had to forego in order to buy one pound of meat (of standard, i.e. 1934–1936, composition). While thus bringing out more sharply, than would have been the case had the cost-of-living index been used, the substitution reaction as between meat and other things, this procedure has the disadvantage that it limits the reliability of forecasts to situations in which the relative price of food as a whole is not greatly different from what it was during 1923–1939. The reader will be reminded of this assumption implied in the method used when it becomes important to remember it.

9. The index-number thus computed showed variations closely similar to the retail price index-number for meats computed by the BLS (which, however, includes also poultry and fish).

Figure III shows the association, year for year, of this relative price (plotted vertically) with the deviations of the quantity actually consumed from the quantity which would have been consumed according to the function $f(r)$. A clear, though not perfect, relationship appears. It slopes downward, as a demand curve should. The historical sequence in the scatter closely follows the general lay-out of the cloud of points. There is no doubt in the writer's mind that it proves the strong influence that the relative price has on the consumption of meat.

Two points need further comment. First, no attempt has been made to eliminate the trends from the time series, although both consumption and price show a marked tendency, the former to fall, and the latter to rise. It used to be the practice, with much less provocation than this, to begin every sort of statistical investigation by eliminating the influence of "time." (The Department of Commerce, in its work discussed above, still cherishes it.) To this, the writer has never ceased to object[1] on the ground that "time" has no economic meaning. Though its inclusion as an independent variable may in many cases improve the statistical fit of a regression equation, the improvement thus obtained is totally empty of meaning as long as the factors which gave rise to the trend-like development are not identified. And if they have been identified, they may as well be taken into consideration directly. Moreover, the trend device completely destroys the value of predictions based on interpolations that have been "improved" with its assistance. No trends have therefore been eliminated anywhere in this paper. The fact that, in the case here under study, the historical path of the observed points in Figure III does not follow only one direction eliminates, or at least reduces, the danger of "trend correlation." The long-run decline of meat consumption occurred *as if* it were in response to a long-run price increase. All inference based on historical observations is necessarily of this nature.

The second point represents the first appearence of a problem which will come up again later in this paper. It arises from the fact that meats (as here defined) have a weight of 22.4 per cent in the cost-of-food index, and of 7.9 per cent in the cost-of-living

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1. See, Nachfragekurven etc., 1929, above quoted, p. 45, and his utterances at the first meeting of the Econometric Society, at Lausanne, 1931, reproduced in Econometrica, Vol. 1, 1933, p. 80.

index. Consequently, the variation in the meat price has a perceptible influence upon the price of food in general, and even upon the price of living. Deflation of the absolute meat price by the cost-of-food index therefore reduces the variation in the relative price of meat. If the meat price variation is eliminated from the cost-of-food index, so that it becomes one of the cost of food other than meat, the meat price thus deflated becomes a good deal more variable. The price elasticity is thereby diminished, since the same quantity variations are related to wider price variations. On the other hand, the weight of the meat price is such that it also affects the total cost-of-living index, introducing, that is to say, an element of positive correlation (one hesitates to call it "spurious") between the price and the deflator used for the adjustment of incomes.

The historical data on which the investigation rests include, of course, the effects of the meat price variation upon both deflators used. In any one year the values of the cost-of-food index and the cost-of-living index were what they were partly on account of the meat price level, such as it happened to be. Had the meat price in any one year been different from what it actually was, both index-numbers would have been different. When the relationships thus obtained, however, are to be used for predictions of future behavior, then the influence that a different meat price level has upon both price-index-numbers can no longer be neglected. The problem will again be taken up when it comes to making predictions. It may be worth noting that this is the form which Hicks' "income effect" of the variation of price takes in our statistical analysis.

VII. FURTHER ANALYSIS OF THE COMMODITY "MEAT"

The commodity for which an analysis of demand has been offered is, of course, not a simple one. It is therefore now necessary to study its internal structure and, in particular, to discover the relationships which exist on the demand side between its various components. The method used for this purpose consists in analysing the relationship connecting the ratio of the prices, and the ratio of the quantities, of any two "commodities" between which substitution is suspected. But before plotting the two ratios against each other, the quantity ratio was in all cases first examined for a possible income effect. In the event any significant influence of income upon the quantity ratio was found in the family budgets (actually none, or only a negligible amount of it, except in the

FIGURE V

Substitution Between Beef and Pork

Ratio of average annual retail price of beef and of fresh pork (pork chops) plotted vertically, ratio of annual quantities consumed of beef and veal, and of pork, plotted horizontally.

FIGURE IV

Substitution Between Lamb and Beef Plus Pork

Ratio of average annual retail prices plotted vertically, ratio of annual quantities consumed of lamb, and of beef plus pork, plotted horizontally.

lard/butter substitution, was present in the analyses finally retained), it was eliminated, before correlating the quantity ratios with the price ratios, in the same way as for a simple commodity.

After considerable experimentation it was found that in the case of meat the most convenient first step along this line was to investigate the substitution between lamb, on the one hand, and beef *plus* pork, on the other. It turned out that the substitution between lamb and either beef (which cannot, in the statistics available, be segregated from veal) or pork (fresh and "other") was fairly loose and irregular, but became much tighter when lamb was studied in relation to beef *plus* pork. From this it follows that, taking the national average at least, lamb presumably plays the rôle of a substitute indifferently for either of the two principal meats. As to the effect of income upon this substitution, the family budgets show the quantity of lamb as a ratio of the quantity of beef plus pork to have been 6.9, 10.5, and 10.8 per cent, respectively, at incomes $265, $455, and $721, in 1934–1936.

These figures are, of course, far from indicating absence of income effect, or even a linear relationship. But the principal curvature, and the strongest effect of income, are located below the income level of $455 per person. Beyond accounting for some part of the discrepancy between the quantity ratio observed in the national data (which, for 1934- 1936, was about six per cent) and that from the family budgets, this was deemed to be irrelevant. Figure IV therefore directly shows the substitution relationship. It is seen to be fairly close and, moreover, exhibits high elasticity, with quantity ratios ranging from 3.6 to 7.1 per cent, in response to price ratios fluctuating narrowly between 80 and 111 per cent.

Next, the substitution between beef (including veal) and pork must be examined. Here, the question arises whether the "commodity" pork really is at all suitably defined. It includes such diverse items as bacon, ham, and fresh pork. But there is no way of separating these different items in the national consumption statistics. On the other hand, separation is possible in the retail price statistics. Experiments have been made with various prices for pork. But in the end, in spite of appreciable divergencies in the movement of the various prices for pork and pork products (mainly a stronger trend-like decline in the retail price of bacon), the retail price of pork chops was used to represent all pork prices. The results as to substitution relation with beef are shown in

Figure V. No adjustment for income effect was necessary, since the quantity ratio (beef/pork) was according to the budget data 112, 118, and 123 per cent, for the three successive income levels.

The outstanding fact revealed by this diagram is the clear shift in the substitution relation which appears to have taken place in the year 1932. Before 1932, the substitution relationship had much lower elasticity than later. It should be noted that in both periods back-and-forth movements in the price-ratio-quantity-ratio combination took place, which in each period followed a well-defined path.

To the writer, this result means only one thing: consumers during the whole period systematically modified the distribution of their meat consumption, as between beef and pork, in close response to relative retail prices of the two kinds of meat. After 1932, however, a substantially increased preference for beef was present. At any given relative price for beef (relative, that is, to the price of pork), a relative quantity of it was taken which was substantially larger than it had been up to 1932.

This finding is of the utmost significance in the present context. It shows that consumers cannot, even in peacetime, be counted upon indefinitely to maintain a routine of behavior, however well established. Without any assignable cause whatsoever — for, let us recall, both price and income influences are thoroughly weeded out — consumers maintain their freedom to change their behavior, to manifest changes in their tastes and preferences. This fact, which will be borne out further in the case of other commodities, has the most far-reaching implications. It ought to be food for thought to the planner and collectivist of every description, and it sheds doubts and imposes reservations on later applications of our results to the "forecasting" of postwar markets. It also tends to indicate that changes in consumers' preferences, far from being gradual, trend-like in their effects, may take place with dramatic suddenness. However that may be, we may register this as one of the more significant findings of our study. It certainly involves a difficulty in the way of accurate postwar predictions; but instead of explaining, or perhaps even assuming, it away, we had better face it and take it into account.

At this point, we might close our analysis of meats, were it not for the fact that the commodity "cheese, other than cottage" stubbornly refused to let its consumption be "explained" in terms
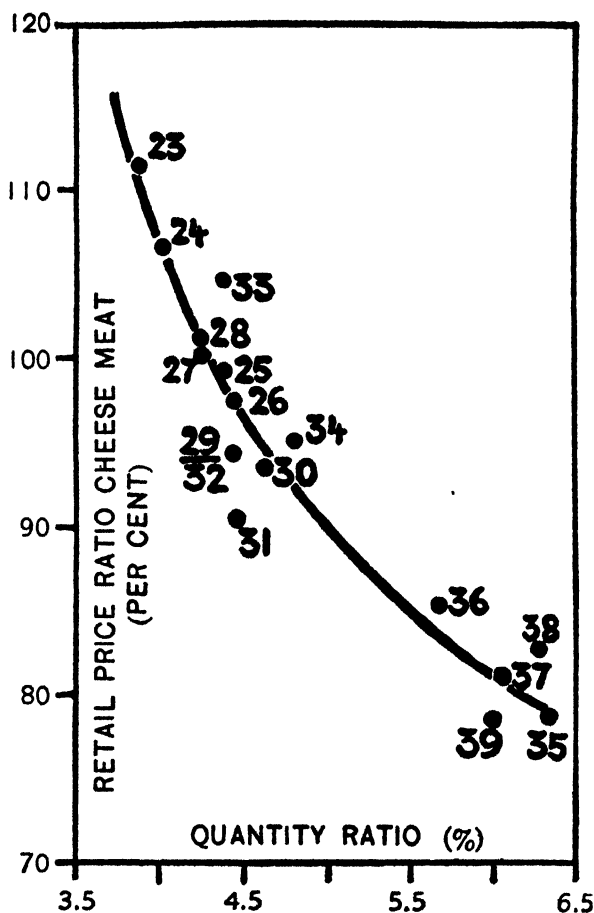
FIGURE VI

SUBSTITUTION BETWEEN CHEESE AND MEAT

Ratio of average annual retail price of cheese and meat, plotted vertically, ratio of annual consumption of cheese (Survey of Current Business, 1942 Supplement, p. 115) and meats, plotted horizontally.

of income and price. The only (and quite reasonable) approach to an understanding of it was to consider it as a substitute for meat. Even so, the result is not very satisfactory. However, the relationship shown in Figure VI appears to be stable enough, and is so much more so than any other alternative explored, that it warrants its use for approximate prediction.

VIII. Poultry, Eggs, Dairy Products, and Lard

The foregoing two sections have served the purpose of explaining the procedure adopted for the analysis of income and price effects upon the quantity demanded. In the present section, diagrams are presented relating to the remaining items in the animal products group. In some cases, where analysis as an "independent" commodity seemed to yield the most reliable results, two diagrams are shown: one corresponding to Figure II, the other to Figure III in the meat analysis.

Quite unexpectedly, poultry, or more exactly chickens (which account for most of it), showed no systematic substitution relation to meat. This may be due in part to the fact that substitution takes place only in relation to the more expensive qualities of each kind of meat. Special calculations designed to adjust for the under-representation of Negroes in the family budget data[2] did not affect the outcome substantially. Accordingly, chickens were treated as an "independent" commodity, with the results shown in Figures VII and VIII.

These results are seen to be not very satisfactory. There appears, in Figure VIII, a clear tendency for a highly elastic price response (ca. 1.7) along a fairly clear path for the years 1923-1929 and 1933–1939. But during 1930–1932, the quantities taken were much larger than in the other years at similar relative prices. This may be due to the fact that, in those years, the width of the price change during the year was exceptionally great, so that, with a high price elasticity, the annual quantity corresponding to the unweighted average price was larger. With this explanation for the 1930–1932 deviations, the result has been accepted as a basis for the forecasts to be presented later.

As for eggs, again the relatively "best" explanation of demand seemed to be that obtaining without consideration of substitution relations. Figures IX and X present the data.[3] The most extraordinary shift in preferences appears to have taken place in the case

2. Because of the exclusion of relief families from the sample covered, and the presumably larger proportion of Negroes on relief during 1934–1936, the relative weights were 95.7 per cent for white families and 4.3 for Negro families. See BLS Bulletin No. 638, pp. 367 and 370.

3. The fact that in Figure IX all the scatter points lie above $f(r)$ is probably due to a ten per cent addition to farm production to allow for non-farm production made in the BAE consumption estimates. That addition may possibly be too large.

FIGURE VIII

INFLUENCE OF PRICE UPON CHICKEN CONSUMPTION

Retail price of roasting chickens (per pound), from Statistical Abstract of the United States 1940, p. 332, adjusted to 1934–1936 purchasing power over food, plotted vertically, and vertical distance of each point in Figure VII from $f(r)$, plotted horizontally.

FIGURE VII

CHICKEN CONSUMPTION AND INCOME

Total national consumption, obtained from Division of Statistical and Historical Research, Bureau of Agricultural Economics, minus quantity annually consumed on farms (Agricultural Statistics 1941, p. 460), computed per person not on farms.

FIGURE X

INFLUENCE OF PRICE UPON EGGS CONSUMPTION

Retail price of eggs (per dozen), adjusted to 1934–1936 purchasing power over food, plotted vertically, and vertical distance of each point in Figure IX from $f(r)$, plotted horizontally

FIGURE IX

EGGS CONSUMPTION AND INCOME

Total national consumption, obtained from Division of Statistical and Historical Research, Bureau of Agricultural Economics, minus annual farm household consumption (Agricultural Statistics 1941, p. 472), computed per person not on farms.

of this commodity. During 1923–1929, demand with respect to price was at a high level and quite inelastic (in the neighborhood of .4). In 1930–1932, a precipitous decline in quantity taken occurred, without any increase in relative price, and only from 1933 on did the reaction to price again become stabilized along a new and much more elastic (about .9) demand curve. But the new "curve" seems to be much less reliable than the old. The writer has no explanation to offer for the high level of consumption in 1938. Whatever the clue to this, forecasts of the demand for eggs can probably be made only in a very tentative way.

Turning now to dairy products, butter is the next commodity to be analyzed. The quantity consumed by the whole non-farm population proved impossible to obtain, but it appeared that the consumption of creamery butter per head of the *urban* population yielded consumption averages approaching those indicated by the family budgets in the relevant income range. Figures XI and XII exhibit a highly interesting relationship. It is quite clear that three different periods can be distinguished, 1923–1927, 1930-1936, and 1937–1939. In each period, response to price was quite systematic. In each successive period, however, the quantity taken at any given price was lower. The decline was accompanied, as it should be, by an increase in price-elasticity. But this decline in preference could not, as was the case for pork, readily be assigned to an increase in preference for a single other commodity (in that case, beef), nor was this decline as mysterious as in the case of eggs, where no increased preference for anything in particular could be traced. For butter, the situation is somewhat intermediate. It is quite certain that the meteoric rise of vegetable shortenings (whose total consumption per capita rose from just over $6\frac{1}{2}$ to $12\frac{1}{8}$ pounds from 1923 to 1937) is mainly responsible — and not, by the way, as some senators seem to believe, oleomargarine, whose consumption remained quite insignificant throughout the period. Unfortunately, however, the data available on the consumption of vegetable shortenings include quantities used both commercially (principally by bakeries) and in households. Moreover, there exists considerable diversity as to qualities, corresponding to different uses, and differing according to the degree of hydrogenation. In consequence, national per capita consumption figures for shortenings are for 1934–1936 about four times as large as consumption according to family budgets.

FIGURE XII

INFLUENCE OF PRICE UPON BUTTER CONSUMPTION

Average retail price of butter (per pound) plotted vertically, distance of each point in Figure XI from $f(v)$, plotted horizontally.

FIGURE XI

BUTTER CONSUMPTION AND INCOME

National consumption of creamery butter, (excluding farm butter) from Survey of Current Business, 1942 Supplement, p. 115, computed per person in the *urban* population.

These considerations point to the fact that the demand for butter should, for a full analysis, be examined in conjunction with all fats, i.e. shortenings, lard, and oleomargarine. A curious analogy exists in the relation between the two animal fats, butter and lard, the former having a positive, the latter a negative income elasticity, and the two vegetable fats. Consumption of shortenings increases, while margarine consumption decreases, with rising incomes. Substitution relations are complicated by the prevalence of widely varying consumption habits in different parts of the country, especially the South.

In these circumstances, the result shown for butter, and the following analysis for lard, should not be looked upon as in any way final, but rather as tentative, partial investigations. They are here presented only in order to allow on some sort of basis, however rough, for price influences in later predictions.

As to lard, the (relatively) most reliable results were obtained by assuming its consumption to be in substitution for butter (with a negative income effect upon that substitution), while the influence of price became most systematic (though even then not very clear), when the price of lard was taken as a ratio to the price of butter. On this basis (which after all is not unreasonable, though it bears all the marks of an incomplete, temporary "explanation"), Figures XIII and XIV show the demand for lard.[4] With some imagination, two different "demand curves" can be distinguished, 1923–1931, and 1932-1939. The years 1924 and 1927 fit this picture badly. But it seems certain that lard has suffered even more than butter from the competition of the vegetable fats.

There remains, finally, the demand for milk, cream, and ice cream. The analysis of this group of commodities has been seriously hampered by the absence of any real statistics on consumption. Only estimates as to the various uses of milk are available, which show considerable detail,[5] but such figures are subject to frequent revision. Moreover, no distinction is made between milk and cream, the estimates being in fluid milk equivalent. The per

4. The agreement between the general level of the scatter points and the function interpolated from the budget data in Figure XIII is spurious, because the quantity ratios for the various years are computed from total consumption of lard (from inspected slaughter), i.e. consumption by the non-farm population, and total consumption of creamery butter, i.e. consumption by the urban population only.

5. See, for instance, Agricultural Statistics, 1941, p. 429.
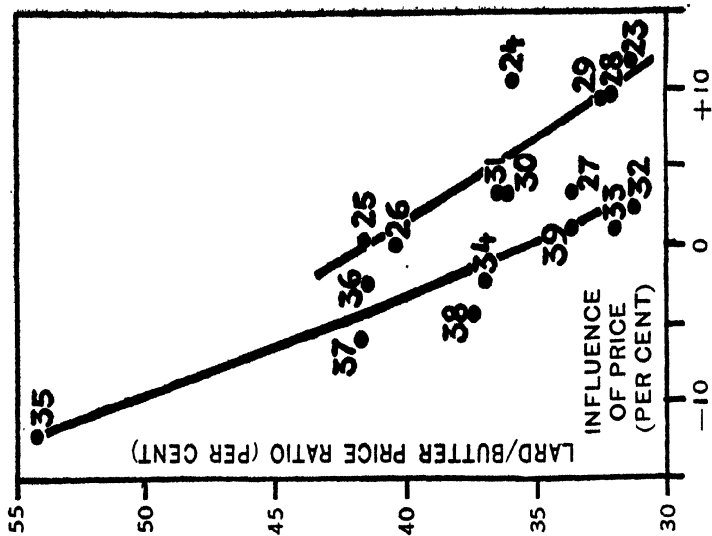
FIGURE XIV

INFLUENCE OF PRICE UPON LARD–BUTTER SUBSTITUTION
Ratio of retail prices of lard and butter plotted vertically, and vertical distance of each point in Figure XIII from the function describing the income effect upon the substitution, plotted horizontally.
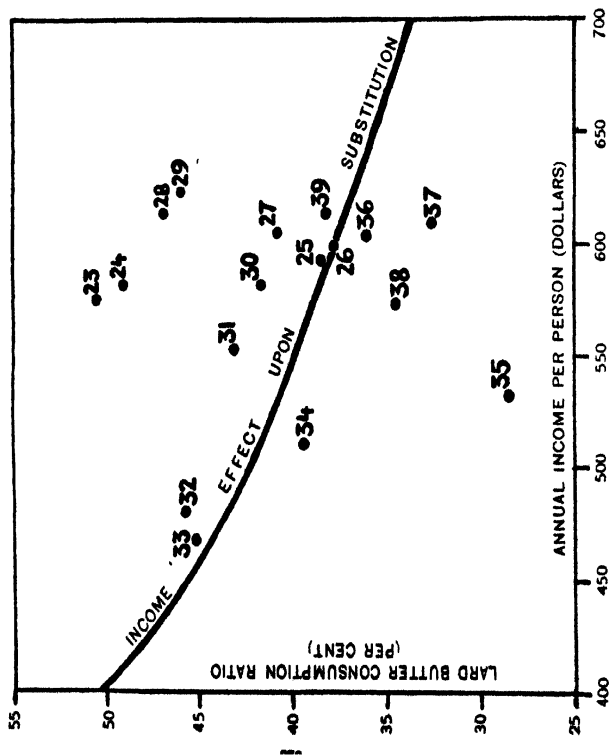
FIGURE XIII

LARD–BUTTER SUBSTITUTION AND INCOME
Ratio of annual consumption of lard (from inspected slaughter) and of creamery butter (in per cent), plotted vertically.

capita consumption in cities and villages (which the Division of Statistical and Historical Research, Bureau of Agricultural Economics, Department of Agriculture, kindly supplied) exceeds consumption according to the family budgets by about one-third. Much milk and cream is, of course, consumed outside the home. Efforts at tracing any influence of price were quite unsuccessful. It is fairly certain, from such studies as have been made, that the price elasticity of demand for fluid milk is quite low.[6] Income, on the other hand, yields only a very imperfect explanation of variations in per capita consumption. Other factors, which cannot be discussed here, probably play a dominant part. "Forecasts" will be made on the basis of income alone, by extrapolation from data supplied by the Department of Agriculture on per capita consumption in cities and villages.

Ice cream, for which national consumption data are available beginning in 1924,[7] seems to be the most "Keynesian" commodity of them all. Figure XV shows a nearly (in fact almost suspiciously) perfect correlation with income, with a very high income elasticity of demand. It is not surprising that per capita consumption is more than twice as large as consumption in households according to family budgets, much of it being consumed outside the home. Predictions of future demand could only be made on the basis of income.

Of the commodities here studied it is only in the case of ice cream that the "marginal propensity to consume" might with approximate propriety be represented by a total derivative. It is a great pity, from the point of view of those who like their economics easy, their "cases" neat, their theories general, and their mathematics elegant, that ice cream does not account for all consumption expenditure, but only for a small fraction of it.

IX. Predictions of Demand for Animal Products for 1950

The first point to be settled in order to make forecasts on the basis of our results is the level of income to be assumed in some postwar year. Without wishing in any way to be associated with the great feeling of optimism which, at the present time, dominates

6. John M. Cassels, A Study of Fluid Milk Prices, Cambridge, 1937, especially Chapter IX.

7. The National Food Situation, published by the Bureau of Agricultural Economics, Department of Agriculture, March, 1944, p. 18.
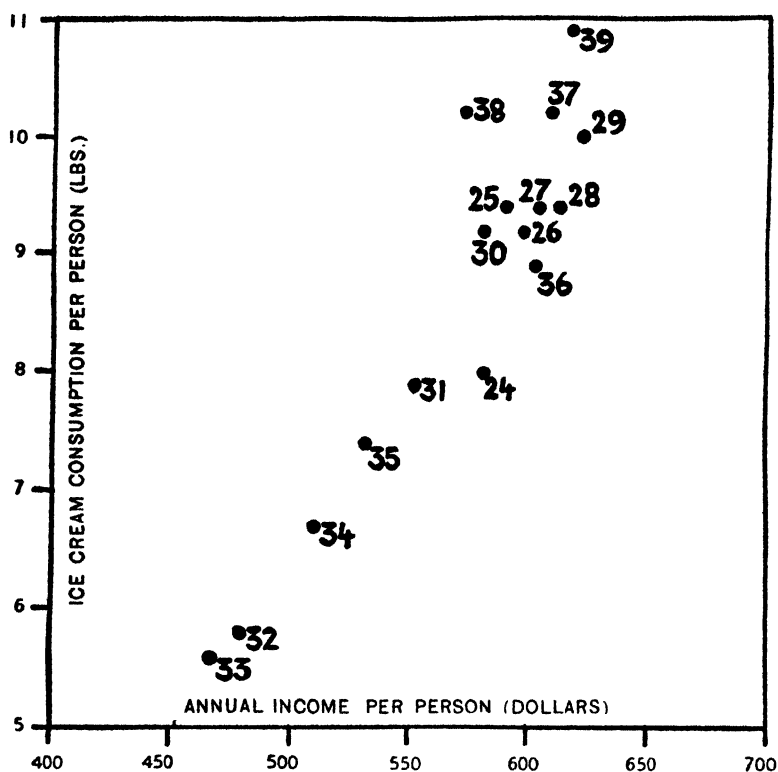
FIGURE XV

ICE CREAM CONSUMPTION AND INCOME

National per capita consumption (in pounds), from The National Food Situation, March, 1944, p. 18, plotted vertically, real income per person not on farms, in dollars of 1934–1936 purchasing power, plotted horizontally.

current expectations, or implying approval of methods used. in estimations of postwar national income levels,[8] the author has adopted, for the present purpose, the "goal" established by the National Planning Association for the year 1950.

That Association has estimated that in the event of full employment the national income in that year, in 1941 prices, will be 140 billions.[9] In terms of 1934–1936 prices, that would make the

8. The writer strongly disagrees with one of the assumptions usually made in arriving at these estimates, namely, that output per man-hour will continue to grow, as a function of "time"!

9. America's New Opportunities in World Trade, p. 29.

national income about $130 billion, equal to $924 per person. Assuming the same proportion between farm and non-farm income per person as in 1939, the average income per person not on farms would in 1950 be $1,153, in 1934–1936 dollars. Supposing the goal of the National Planning Association to be missed, so that national income was, say, $115 billion or even only $100 billion (in 1934–1936 prices), that would involve incomes per person not on farms of $866 and $996. Estimates will be presented of demand for our commodities for all three national income levels as of 1950, i.e., $100, 115, and 130 billion, representing $866, $996, and $1,153 per person not on farms. All incomes are, of course, in 1934–1936 dollars.

After all that has been said about the influence of relative prices, it should be made quite clear what is implied in forecasting consumption of our commodities on the foregoing assumptions as to income. These incomes may be used to make predictions in the event that relative prices have remained the same, for each commodity, as in 1934–1936. And since relative price has been measured above with reference to food prices (and not to the cost of living as a whole), the assumption really is, as long as no allowance is made except for income, that the structure of food prices has remained unaltered. Moreover, it is assumed that the price of food as a whole has not changed radically in comparison with the other elements of the cost of living. Finally, it cannot be emphasized enough, in the light of our findings, we must, of course, assume that consumers' demand behavior will, after the war, return to its prewar patterns. This assumption is probably the most serious one involved in the making of any predictions, and no quantitative allowance can, in the nature of the case, be made for it. A *merely verbal*, but emphatic, warning must suffice.

On these assumptions, then, it should be possible to read from the diagrams presented above the consumption per capita which may be expected in 1950. But there is one difficulty: the range of observations in the only family budget inquiry usable for our purpose stops at the income level of $721 per person. The Consumer Purchases Study, on the other hand, reaches much higher levels of income (in the highest family income class, the income per person is in the neighborhood of $1,800), but, for reasons already discussed, it fails to show the net influence of income upon consumption, and can therefore not be used. Moreover, it shows

family consumption separately by regions and type of community, so that, to arrive at a national picture, its data would have to be weighted — a complicated and in many ways dubious procedure.

It has therefore been decided to "estimate" the further course of the consumption-income function on the basis of free-hand extrapolation.[1] In performing these extrapolations, the writer attempted to allow as little as possible — for fear he might overstate his case — for the reasonable expectation that increases in income beyond a certain point are in the end accompanied by a reduction in the rate of increase of consumption.

However, the diagrams showing the influence of price also had to be consulted in making these estimates on the basis of income alone, assuming relative prices constant. The reason is that, when a shift in the demand curve has taken place, after 1934–1936, then the existence of the same relative price as in 1934–1936 may lead to a positive, or negative, increment in the quantities indicated by $f(r)$.[2]

The results of these estimates are shown in Table III. The last two columns in Table III indicate by how much per capita consumption among the non-farm population (or, in the case of butter, in the urban population) would be increased, if in 1950 the national income rose from 100 to 115, or from 100 to 130 billions, in 1934–1936 dollars. Let it be repeated that these estimates assume that relations among the individual prices of the foodstuffs considered, and between them and other food prices taken together, and finally, between all food prices and the prices of other cost-of-living items, will be in 1950 as they were in 1934–1936.

These, however, are very restrictive assumptions, which make the estimates quite useless, unless all the assumptions are fulfilled. Table IV, also computed from materials presented in this paper, therefore shows the effect that a ten per cent decrease in the relative price of each commodity considered would have upon its consumption. Strictly speaking, the assumption is that each

1. The writer wishes once more to emphasize that it cannot be held against him if he was compelled, lest he drop the problem, to recur to such cavalier procedures, of which he is far from being fond. Objections should be laid at the various Washington doors where they belong.

2. Even in the case of commodities demand for which had not shifted, an adjustment was in some cases necessary, because the average consumption according to the national statistics did not in all cases exactly agree with the quantity which, according to $f(r)$, should have been taken at the average income for those years.

TABLE III

Estimated Consumption Per Capita (Non-Farm Population)[1] at Different Levels of the National Income Expressed in 1934–1936 Dollars, in the Year 1950, Assuming Relative Prices of Commodities Considered to be as in 1934–1936

	(1)	(2)	(3)	Increase in Per Capita Consumption if Income Increases from (1) to (2)	from (1) to (3)
National income (billions)	100	115	130		
Income per person	$866	$996	$1153		
Per capita consumption:[2]					
All meats (lbs.)	151.0	157.0	163.0	plus 6.0	plus 12.0
Beef and veal	73.8	76.7	79.6	2.9	5.8
Pork (all)	68.9	71.7	74.5	2.8	5.6
Lamb	8.3	8.6	8.9	.3	.6
Cheese (lbs.)	8.2	8.5	8.8	.3	.6
Chickens (lbs.)	28.2	32.2	36.2	4.0	8.0
Eggs (dozens)	30.1	31.3	32.5	1.2	2.4
Butter (lbs.)	27.1	28.5	29.9	1.4	2.8
Lard (lbs.)	6.8	6.8	6.9	0.0	0.1
Fluid milk and cream (lbs.)	420.0	450.0	475.0	30.0	55.0
Ice cream (lbs.)	13.3	14.3	15.2	1.0	1.9

[1] Butter, urban population; ice cream, total population.
[2] Lamb consumption was found by determining from Figure IV the quantity ratio to beef plus pork which corresponds to the price ratio 87 per cent. Similarly for beef and pork, and lard. Average relative retail prices will be found in Table IV.

price, as listed, has decreased relatively to food prices in general, without affecting the cost of living as a whole. This can only come to pass if the decrease in the prices of our commodities is compensated by an increase in the prices of other foods.

TABLE IV

AVERAGE RELATIVE RETAIL PRICES OF ANIMAL PRODUCTS IN 1934–1936
AND AMOUNTS BY WHICH CONSUMPTION WOULD CHANGE PER PERSON
(NON-FARM POPULATION ONLY), IF EACH PRICE DECLINED
BY TEN PER CENT RELATIVELY TO OTHER FOOD PRICES

Commodities	Average Relative Retail Price (in Cents) in 1934–1936	Change in Consumption Per Person in the Non-Farm Population, if Relative Prices Dropped by Ten Per Cent
All meats.....................	31.1 cents	plus 14.0 lbs.
Beef and veal..............	28.6	plus 6.8 lbs.
Pork (all).................	36.9	plus 6.4 lbs.
Lamb.....................	27.4	plus .8 lbs.
Cheese.......................	26.8	plus .8 lbs.
Chickens....................	17.7	plus 3.6 lbs.
Eggs........................	35.7	plus 2.3 dozens
Butter......................	33.6	plus 3.0 lbs.
Lard........................	15.8	plus .7 lbs.
Milk and cream..............	— }	No price effect
Ice cream...................	— }	

It will be remembered that the influence of price was originally determined as being independent of the influence of income. In consequence, the effect of the assumed price changes can be read directly from the relevant diagrams. Inspection of Table IV shows that, on the assumptions above stated, consumption would in every case, with the exception of chickens, milk and cream, and ice cream, be increased equally (eggs), or more (all others) by a ten per cent decrease in price than by an increase in the national income of thirty per cent. In the case of milk and cream and of ice cream, no clear price influence could be found in past experience, and none has therefore been assumed.

The writer is well aware that no undue significance should be attached to these findings. The results would look quite different if cereals had been included in this study. Moreover, ample warning has already been given of the apparent capriciousness with which consumers insist on revising their preference scales.

And they may very well choose to do just that, when the war is over.

The point to be made here, however, is quite different. The above results should serve as a warning to all those who believe that prices have lost all their significance, and are indeed by their variation a mere nuisance, impairing "security," causing "pockets of unemployment," and so forth. Consumers, up to 1939 at least, still seem to have reacted to price changes with quite obstinate consistency. And planners might as well realize that, to have a world in which they can work with impunity and in perfect infallibility, they must do away with free markets.

There are, of course, many more detailed conclusions which can be drawn from our findings. For instance, it will make a substantial difference how the per capita consumption of meat is made up as to principal kinds. Suppose a shift occurred in the relative retail prices of pork and beef, such that the price of beef falls, relatively to fresh pork, by 20 per cent (as actually happened in 1933–1935), while the price of meat as a whole remained unaffected. Then the same total meat consumption would change in composition, in a way most relevant to producers. Whereas, before the change in relative price, beef accounted for about 41 per cent of the given total, it would, after the change, contribute 53 per cent — an increase in actual quantity sold by about 29 per cent, while the total quantity of pork would simultaneously decline from 59 to 47 per cent of the total, or by about 20 per cent.

Moreover, in such an event, assuming the relative price of shoes to remain constant, and incomes also to remain unchanged, in spite of the shift in the relative prices of beef and pork, imports of hides might well drop precipitously. Relative meat prices are thus seen to be a decisive factor in determining the volume of hides imported. It is not clear (but not very probable) that the National Planning Association has taken account of this influence in its estimates. The writer would be inclined to think that the relative prices of the principal meats, in relation to each other, as well as in relation to other things, are a more important factor in determining imports of hides than either the national income or even the output of shoes. Other important consequences might follow in the national demand for foodstuffs, affecting soil use, and possibly foreign trade.

In making estimates based on more complicated assumptions

as to relative price constellations, great care must, of course, be exercised with regard to the possible income effects of the assumed price changes. The example of price effects given in Table IV was purposely so constructed as to annul the income effects involved. But if the assumption to be explored were a 10 per cent increase in the price of all meats taken together, not compensated by any other price change, then, obviously, the effects of this assumption on the index numbers of the cost of food, and on the cost of living as a whole, cannot be neglected. First, since meats have a weight of 22.4 per cent in the cost-of-food index, a 10 per cent increase in the meats price will raise that index number by 2.24 per cent, thus calling for a revision of the relative price of each one of the individual foodstuffs whose "relative price" is expressed as a ratio to the prices of food in general. This is why the change in the relative price of an important "commodity" such as meats will indeed cause a general, though in the case considered not very substantial, rearrangement of the quantities that consumers take of all foodstuffs. For the same reason, an increase in the absolute price of meats by 10 per cent actually will raise its relative price, as here computed, by only about 9.8 per cent. At the same time, since the cost-of-food index has a weight of 35.4 per cent in the cost-of-living index, there would also be an increase in the latter amounting to .79 per cent. In consequence, there would occur a decrease in real incomes in about the same proportion, which would, in turn, entail revisions, though, in the circumstances considered, of very minor extent, in each and every commodity and service upon which consumers spend their money.

The foregoing considerations are set forth in the hope that, clumsy though the procedure described is, they may, by showing in some detail the various adjustments that might be called forth by the change in a single important price, or price group, remind the reader that the theory of general consumers' equilibrium, abstract as it is, has nevertheless its counterpart, even in the peculiar sort of reality in which this paper has been operating. A little more respect for facts, on the one hand, and for the methods and ideas of economists who wrote before the appearance of the *General Theory*, on the other, might, if suitably combined with the new methods and ideas, after all be conducive to better results than are attainable on the basis of total disregard of both facts and pre-Keynesian economic thought. The writer cannot help feeling

that somewhat more responsible conclusions would, in that event, have been reached by both the Department of Commerce and the National Planning Association. That Keynesian ideas have greatly stimulated economic thinking, nobody can seriously doubt. That they have been an undiluted blessing seems, to the writer at least, open to question.

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THE EQUILIBRIUM OF THE FIRM
IN MULTI-PROCESS INDUSTRIES

Assumptions Involved in Constructing
an Input-Output Table

The argument of this paper centers on the data contained in the familiar input-output table. At least three basically different types of assumptions are involved in the construction of such tables. All of the relationships represented in them are assumed, but some of their data could be ascertained objectively, if the situations illustrated by the tables were real rather than hypothetical. Hereafter data of a type that would be known to an entrepreneur in real life will be referred to as "objective-like assumptions."[1] In a purely hypothetical situation it will always be necessary to accept one set of assumptions as "objective-like" assumed facts.

A second type of assumption found in the familiar input-output table consists of facts which are based upon an *assumed relationship* to objective-like facts. For example, if the application of eleven input units *is* resulting in an output of 1650 products, assertions regarding probable outputs, if more or less input units were applied, are purely inferential. Therefore, the terms "inferential assumptions" will be used in referring to data of this type.

The third type of assumption found in the familiar input-output table includes facts and figures which are based upon *known relationships* to prior assumptions. Facts of this type might well be called "derivative assumptions."[2]

Because all of the data of an input-output table are assumed, it becomes necessary to examine the legitimacy of each assumption. Objective-like assumptions are always acceptable, provided only that one is not requested to assume more facts as objective

1. For example, the following facts would be known to the manager of a business enterprise: (1) the size and nature of the firm, (2) the number of input units actually applied, (3) the resulting output, (4) the cost of the input units, (5) the aggregate overhead of the firm, and (6) the selling price of the output.

2. An example of a "derivative assumption" is the average return per unit of input, when the output and the number of input units applied are given.

than could be known in a real situation.[3] Mathematical accuracy constitutes the test of derivative data. Inferential data are acceptable only when a counterpart of the pattern of relationships assumed can be found in the world of actuality.

APPLICATIONS OF THE TABLE TO REAL SITUATIONS

The *basic assumption* underlying the inferential data of every input-output table is a series of margin increments so arranged as to lead inevitably to the phenomena of increasing and diminishing average returns. The question to be raised now is whether the pattern of relationships introduced into the typical series of margin increments does or does not coincide with conditions known to exist in the world of industry. In searching for the answer to this question, it is desirable to classify enterprises under two headings according to the nature of their productive processes. Industries fall into the first classification, if a simple application of an input unit to raw material results in a finished product. Industries belong to the second type, when several successive applications of input units, each of a distinctly different nature, are necessary to obtain a finished product.

In manufacturing, labor is commonly treated as the variable factor. When only a single process is involved in the productive routine, the quantity of labor applied has such a close physical association with the resulting output as to cause managers in their thinking to attribute the value created to the labor applied. In such cases, too, expansion of output is achieved by applying more labor to more raw material. Because of the close association of output to input, the effect of the expansion is naturally measured by imputing the *increased* output to the *added* input. This, of course, is the technique employed by the marginal analysis.

It is admitted that this direct type of productive procedure does exist in some industries, particularly in those, such as mining, logging, fishing and farming, engaged in the exploitation of natural

3. Readers often accept "inferential assumptions" as "objective-like." This occurs, for example, when a text-book writer requests one to "Assume that ten men produce 30 products and *that eleven men would produce 32 products.*" In such a case the reader has the right to ask what reasons exist for supposing that eleven men *would* produce 32 products, even assuming that ten men do produce 30 products. The second factual assumption involves an assumption of a relationship to the first factual assumption, the validity of which the expositor has yet to establish.

resources. The error of the conventional treatment lies in its unqualified assumption that, because the analysis is applicable to a few industries, it is therefore applicable to all and can be used as the basis of a broad generalized doctrine, i.e. the doctrine of the equilibrium of the individual firm.

In multi-process production a single continuous stream of raw material moves through two or more departments. In each department, labor performs some routine task distinctly different from the task performed by labor in other departments. As a result, no individual workman, or gang of workmen, in a multi-process industry is ever conscious of being responsible for any particular portion of the finished product. And because output is not closely associated with input, it becomes difficult for management to attribute increases in output to particular units of input. In a multi-process set-up, the aim of management is to distribute workmen among the various departments in such a way as to synchronize the work as a whole, eliminate bottlenecks, and create an even flow of material through the plant. On paper this synchronization is a purely mathematical problem, easily solved, but in actuality it is a most complex one.

To illustrate some of the difficulties involved in applying the orthodox analysis to a multi-process industry, assume that three men working a full day in department A of a plant are able to complete the first manufacturing step on 12 products. Assume that the 12 products then pass into department B, where two men work on them for another day, before they pass into department C to be completed by the work of one man for still another day. Thus, once production is under way, the daily output of the plant and its six workmen is 12 finished products.

It will be recalled that the procedure for determining a marginal product in a single-process industry is to withdraw a unit of input and note the effect of the withdrawal upon total output. The effect on total output of withdrawing an input unit from the multi-process plant just described will vary according to *which* input unit is withdrawn. For example, the loss of one input unit in department A causes a decline of four in the total output of the plant. By comparison, the loss of an input unit in department B causes a decline of six in total output. Such a withdrawal in department C results in the loss of the total output of the plant.

A most peculiar effect is achieved, if a unit of input is added.

If this input unit is added to department A, the output of this department would presumably be increased by four products, but the output of the entire plant would not be changed, since departments B and C would not be able to process the increased output of department A without a similar expansion. If the latter two departments were to be permitted to expand also by adding an input unit to each, their potential abilities would become 18 and 24, respectively, but their actual outputs could not be extended beyond 16, the output of department A. Such an expansion would have the result, therefore, of increasing the output of departments A, B, and C by 33⅓ per cent while increasing costs of the respective departments by 33⅓, 50 and 100 per cent. Obviously, in practice such an expansion would be too expensive to consider.

For purposes of theoretical analysis the situation becomes hopelessly complex. Marginal output is (by definition) the increase in total output that results from the application of *one* more input unit. Orthodox analysis treats input units as homogeneous, and assumes the practicability of expanding a scale of operations by the addition or subtraction of input units *one at a time*. But, as has been shown, the output of the *intra*-marginal input unit *varies* in a multi-process industry according to which unit is withdrawn, while the output of a single *extra*-marginal input unit in an already synchronized set-up is zero. For this reason expansion of production by increases of a single input unit is not practical.

At first glance it would seem to be possible to circumvent the difficulty just described by enlarging the concept of one input unit to include all the additions needed in each department to achieve a single synchronized expansion. For example, since in the objective situation depicted three units of input in department A seem to synchronize with two and one in B and C, respectively, why not consider minimum expansion to be the addition of six input units distributed between the three departments in the ratio of 3, 2, 1. This solution is more apparent than real.

The tasks performed by each cost center are distinctly different in nature. For this reason each cost center, considered by itself, resembles an industry operating under a single-process productive organization. Hence each cost center is subject to the law of non-proportional returns, which, as stated earlier, is applicable when a single process is involved.

It does not follow from this, however, that the curve of marginal products for each of the several cost centers of a plant will be identical. To illustrate, suppose that the addition of six men distributed among the departments in the ratio of 3, 2, 1 does achieve a synchronized output increase of, say, 45 per cent. Might it not still be true that the addition of another six men distributed among the departments in the same manner might result in an increase of 75 per cent, 50 per cent and 25 per cent in the outputs of the respective departments, and so destroy the required synchronization? A third expansion of six men might have an entirely different relative effect on the output of each of the departments, say 60 per cent, 50 per cent, and 30 per cent, respectively. Thus it will be seen that the size of the input unit needed to achieve synchronized expansion will vary with each expansive step, whereas marginal analysis requires expansion to occur by additions of a uniform quantity or value.

Consequently, attempts to apply the marginal type of analysis to multi-process production leads to hopeless complexity. Under the circumstances it is absurd to claim that entrepreneurs strive, consciously or unconsciously, to expand their scale of operations until marginal costs equal marginal returns. As a matter of fact, the concept of marginal output is foreign to the thinking of the average plant manager, possibly because the simplest practical application of marginal analysis to multi-process industry is too complex to constitute a working guide in practice.

How Scale of Operation is Determined

In determining the scale of operations for a plant, managers do pay attention to unit costs, but the costs to which they attend are cost figures prepared for them by cost accountants. In searching for the factors determining a scale of output it would seem appropriate, therefore, to examine the methods of computation employed by cost accountants.

In general, there are two types of cost systems in use by plants producing goods for a market. These are known as "actual" and "normal" cost systems. In the first, unit costs of production are obtained by dividing the actual aggregate monthly cost of operating, i.e. labor, materials, and overhead, by the number of products manufactured during the month. When more than one product is produced, some arbitrary method of allocating overhead between

the several products is required. If there is an inventory of goods in process, the formula is further complicated.

The factor of importance to this paper, however, is not the mechanics of cost accounting, but the inferences normally drawn from ordinary cost data. When aggregate overhead cost remains fairly constant from month to month, and there is no change in the market prices of labor and materials, unit costs computed by "actual" cost methods exhibit a tendency to vary inversely with output. Hence most managers are convinced that increases in the scale of plant operations, up to the point where overtime pay is required, always lead to lower unit costs; that is to say, they do not recognize the possibility of a stage of increasing average costs intervening before capacity output is reached.

Under a "normal" cost accounting system, computations are placed on an annual rather than a monthly basis. This fact introduces a new element into the distribution of overhead. Thus, in a "normal" system, the overhead for a given month is not composed of the expenses incurred during that month; instead, it is a portion of the estimated overhead for the year. The method of computing this overhead is as follows. The sales department reports on the number of products which it believes it will be able to sell during the following year. This estimate is then adopted as the "normal" basis for distributing overhead expenses. The actual overhead expense of the plant for the previous year, adjusted for expected changes, is then divided by "normal" output to derive a "normal" overhead-per-product figure. Each time a product is completed, production costs are *debited* and "burden applied" is *credited* for this "normal" amount. As overhead expenses accrue or are paid, the burden applied account is *debited* and accounts payable or cash account is *credited*.

During the subsequent year actual production is stepped up or down from month to month on the basis of current sales and the firm's previously decided inventory policy. If at the end of the year actual production has exceeded "normal" the "burden applied" account will have a *credit* balance, which will be taken to mean that the firm has made a profit in addition to its normal profit. This excess profit is regarded as the result of exceeding "normal" production schedules.

On the other hand, if actual production fails to equal "normal," the "burden applied" account will have a *debit* balance at the end

of the year. In a manager's eyes such a debit balance represents a deduction in normal profits made necessary by the failure of the firm to maintain the "normal" scale of operations.

Thus cost accounting methods are such as to lead plant managers to conclude that there are but two practical ways of lowering unit costs. The first is to push aggregate annual production beyond "normal," in order to achieve lower overhead costs per product. Whether this is possible or not depends primarily upon the success of the sales program. The second is to discover labor-saving devices and methods by means of which fewer men in one or more departments will be able to produce the same output. Attempts to increase profits by varying the number of men employed, in the hope of equating marginal costs to marginal returns, are not likely to be considered by the manager of a multi-process industry, because the problems of departmental synchronization thereby created dwarf considerations of marginal efficiency.

<div align="right">WILFORD J. EITEMAN.</div>

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DOES THE CONSUMER BENEFIT
FROM PRICE INSTABILITY?

An affirmative answer to the question, "Does the consumer benefit from price instability?", based on a new theorem, was given by Dr. Frederick V. Waugh in his article on this subject printed in the August, 1944, issue of this JOURNAL. Dr. Waugh stated: "This theorem appears to show that, in a certain sense at least, consumers are harmed by price stability, and that they benefit from instability of prices. Such a conclusion, if correct, obviously has important policy implications, since it runs counter to the accepted doctrines upon which many national and international programs are based."

The importance of the question involved appears to warrant further examination of the theorem for the purpose of determining whether it supplies an adequate basis for answering the question posed. The theorem in its simplest form is stated as follows: "Let the price of any commodity or service be P_1 in one period of time and P_2 in another equal period. If these prices are unequal, every individual consumer of the commodity or service will enjoy a greater average consumer's surplus in the two periods than if the prices were stabilized at the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$."

The author continues: "This is true for any demand curve which slopes downward to the right. Draw any such curve, as in Figure I. Now consider any two prices, P_1 and P_2, which might be set in two successive weeks, years, or other equal periods; and also consider the average price $P_0 = \frac{1}{2} (P_1 + P_2)$. We wish to compare two situations: First, one in which the price would be exactly stable, being held at P_0 in each period; second, one in which the price would be P_1 in the first period and P_2 in the second period. In the period when the price is above P_0, the loss in consumer's surplus (as compared with the situation P_0) is represented by the area marked L in figure 1. When the price is below P_0, the gain is represented by the area marked G. Since the distance $P_1 - P_0$ and $P_0 - P_2$ are equaled, it is easy to see that G is always greater than L, if the demand curve slopes downward to the right."

The answer given to the question, "Does the consumer benefit from price instability?" was based solely upon this theorem, which
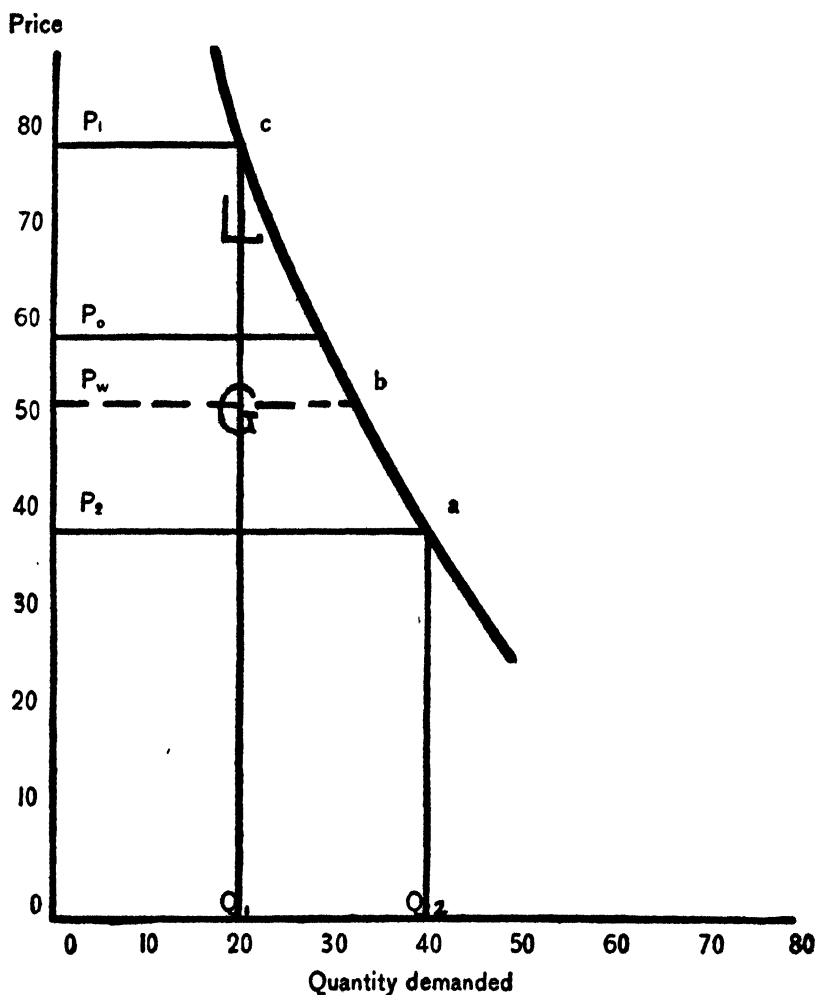
FIGURE I

is limited to the stabilization of prices at the simple arithmetic mean. The results stated in the theorem would obviously apply to the stabilization of prices at any point above this arithmetic mean. My main objection to Dr. Waugh's paper is that an evaluation of the influences of price stabilization on the welfare of consumers, based solely on results obtainable from stabilizing prices at the arithmetic mean, as specified in Dr. Waugh's theorem,

regardless of the correctness of this theorem, is inadequate and may be very misleading, because the results indicated are directly opposite to those obtainable from stabilizing prices at a number of other points and no showing was made that the point specified in Dr. Waugh's theorem is the only one, or the most feasible one, at which prices may be stabilized.

If price stabilization operations were of necessity limited to stabilizing prices at or above the arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$, or if stabilizing prices at any other point would give essentially the same results, the theorem as stated would appear to give considerable support to the generalization that "consumers are harmed by price stability, and that they benefit from instability of prices." In the absence of any showing that the arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$, is the only point, or at least the most feasible one, at which prices might be stabilized, it would appear obvious that the specified mean is only one of many points at which prices conceivably and actually might be stabilized. If prices may be stabilized at any one of a number of points, it would appear reasonable to suppose that the immediate influence of price stabilization operations on consumer's surplus would depend, to a considerable extent, upon the point at which prices were stabilized.

If prices were stabilized at or above the arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$ (see Figure I)[1], every individual consumer of the commodity or service would enjoy a smaller average consumer's surplus than if prices were not stabilized at all. On the other hand, if prices were stabilized at or below the weighted average of P_1 and P_2[2], P_w, every individual consumer of the commodity or service would enjoy a larger average consumer's surplus than if the prices were not stabilized at all.[3] Prices stabilized at intermediate points

1. In using Figures I and II to show changes in the average consumer's surplus, it was assumed that the marginal utility of money to the individual purchaser remains unchanged.

2. Prices weighted by the quantities demanded at the respective prices.

3. The weighted average,

$$P_w = \frac{P_1 Q_1 + P_2 Q_2}{Q_1 + Q_2} \text{ and } (P_1 - P_w)Q_1 = (P_w - P_2)Q_2$$

(see Figure I). But $(P_1 - P_w)Q_1$ is less than the area of the rectangle $P_1 P_w bc$, which represents the increase in consumer's surplus as a result of lowering prices from P_1 to P_w, and $(P_w - P_2)Q_2$ is greater than the area $P_w P_2 ab$, which represents the loss in consumer's surplus resulting from raising prices from P_2 to P_w. Then, the net effect of stabilizing prices at the weighted average would be to increase average consumer's surplus. This holds true for all demand curves which slope continuously downward and to the right.

might show decreases or increases in the average consumer's surplus, depending upon the location of the point.

Appropriate theorems might be formulated for other special cases, somewhat on the order of that formulated by Dr. Waugh for use in showing the influence of stabilizing prices at the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$. The wording for these theorems might be the same as that for Dr. Waugh's new theorem, except that the ending ". . . the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$" might be changed to read, "at or above P_0," "at or below P_w," etc. It is apparent that if one is concerned only with the consumer's surplus, particularly for short periods, and if the feasibility of stabilizing prices at the various points is disregarded, conceivably almost any results varying all the way from great increases in consumer's surplus, on the one hand, to great decreases in consumer's surplus, on the other, might be obtained by means of price stabilization operations in accordance with specialized theorems of rather broad application.

But assume, for the purpose of analysis, that price stabilization operations are confined to stabilizing prices at the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$. Under this condition, what does Dr. Waugh's theorem contribute toward an understanding of the influence of price stabilization, aside from changes in the weighted average price level, on the welfare of consumers? A corollary to Dr. Waugh's theorem is that the stabilization of prices at the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$, would raise the weighted average price level of the commodity or service. With a demand schedule similar to that illustrated in Figure I, advances in P_1 and P_2 by amounts great enough for their weighted average to equal P_0, but without changing the spread between P_1 and P_2, would have about the same influence on the average consumer's surplus as that of stabilizing the price at the arithmetic mean, $P_0 = \frac{1}{2} (P_1 + P_2)$. Whether, under other conditions, advances in P_1 and P_2 by amounts great enough for their weighted average to equal P_0, but without changing the spread between P_1 and P_2, would reduce the average consumer's surplus by amounts greater or less than that indicated by Dr. Waugh's theorem would depend upon the shape of the demand curve. Then it would appear that Dr. Waugh's theorem contributes little, if anything, toward an understanding of the influences of price stabilization operations, aside from

changes in the weighted average price levels, on the welfare of consumers.

The point or points at which it would appear desirable and feasible to stabilize prices of a particular commodity or service may be influenced considerably by the purposes to be served. One purpose might be simply to eliminate fluctuations without changing the weighted average price of the product or service. Other purposes might require variations all the way from the stabilization of prices at greatly advanced average levels, primarily for the immediate benefit of producers, on the one hand, to the stabilization of prices at greatly reduced average levels, primarily for the immediate benefit of consumers, on the other. The influences on consumers and on others of stabilizing prices at the various levels may be accounted for, in part, by stabilization *per se,* and in part by changes in weighted average price levels.

In determining the point or points at which it would be feasible, from the point of view of the general welfare, to stabilize prices for a particular commodity or service, the influences of such stabilization operations on incomes to producers, on the quantities produced and consumed, and on other important considerations, as well as on the consumer's surplus, might well be taken into account, from both the short-time and longer-time points of view. With a demand schedule similar to that illustrated in Figure I, the immediate influence of stabilizing prices at the arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$, would be to reduce the average quantity consumed and to increase the average gross incomes to producers (including marketing agencies), as well as to reduce the average consumer's surplus for each consumer of the commodity or service. But if, under similar conditions, prices were stabilized at the weighted average of P_1 and P_2, P_w, the immediate influence would be to increase the average consumer's surplus, enlarge average gross returns to producers, and to expand the average quantity consumed. The arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$, and the weighted average of P_1 and P_2 are only two among many points that might be selected to show different results, but it is apparent from the illustrations given that the effects of price stabilization operations on the average consumer's surplus, on the average quantity consumed, and on gross incomes to producers may be influenced greatly by the location of the point at which prices are stabilized.
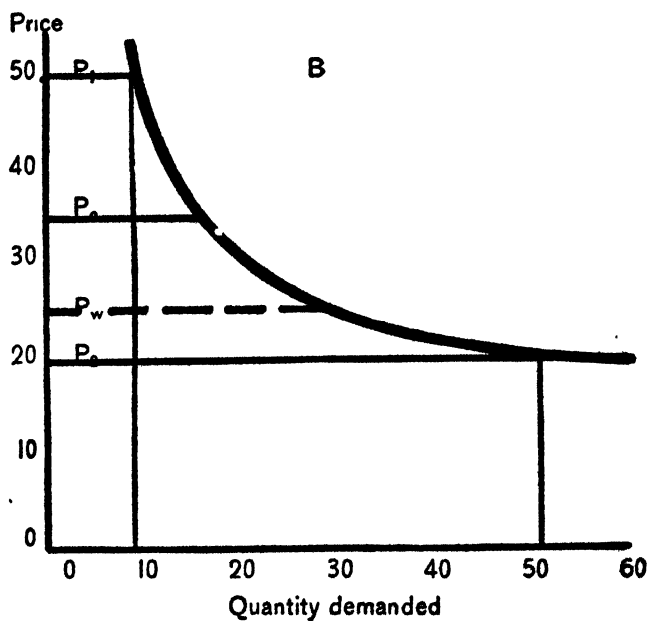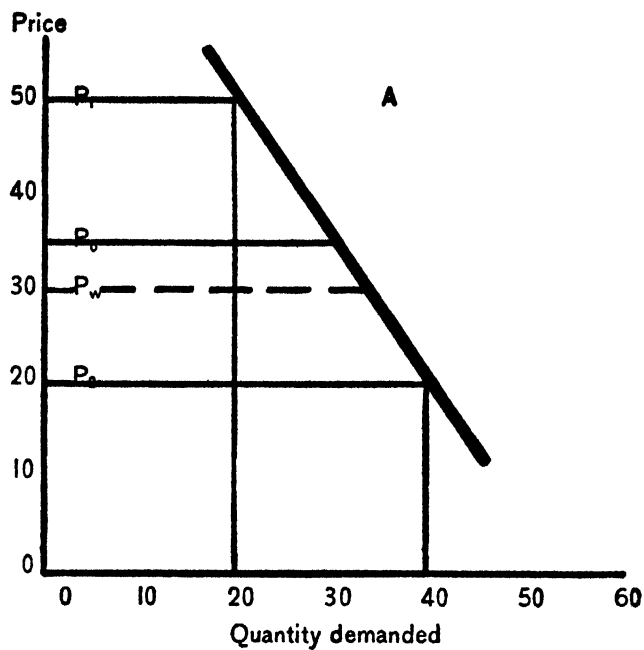
FIGURE II

The shape of the demand curve may affect considerably the immediate influences of stabilizing prices for a particular commodity or service at specified points. Some indications of such effects may be obtained from an examination of Figure II, showing two of the many shapes of demand curves. With demand curves similar to those indicated in Figure II, if prices were stabilized at the arithmetic mean, $P_0 = \frac{1}{2}(P_1 + P_2)$, the average consumer's surplus would be reduced in 2*A* and in 2*B*; the average quantity demanded would remain about unchanged in 2*A* and would be reduced in 2*B*; and the average gross income to producers would be increased in 2*A* and reduced in 2*B*. If prices were stabilized at the weighted average, P_w, the average consumer's surplus would be increased in 2*A* and in 2*B*; the average quantity consumed would be increased in 2*A* and reduced in 2*B*; and the average gross income to producers would be increased in 2*A* and reduced in 2*B*.

It is apparent from the illustrations given, and from others that might be given, that price stabilization operations may give results varying all the way from increases in average consumer's surplus, in gross incomes to producers, and in average quantity demanded to decreases in average consumer's surplus, in gross incomes to producers, and in average quantity demanded, including various combinations of these results, depending upon the point at which prices are stabilized and upon the shape of the demand curve. Such variations would appear to indicate that conclusions based solely on Dr. Waugh's theorem, regardless of its correctness, or on any other special case, would supply a very inadequate basis for answering the question, "Does the consumer benefit from price instability?." An answer to this question based solely on such a special case, in the absence of a showing that the specified point is the only one, or at least the most feasible one, at which prices might be stabilized, and without calling attention to the diversity of results obtainable from other special cases, instead of supplying a dependable basis for a correct evaluation of national and international programs and policies, may be very misleading.

But even if Dr. Waugh's theorem as stated in Part I of his paper were otherwise adequate, attention might be called to the fact that the measure used for consumer's surplus as shown in Figure I is recognized by Marshall, Hicks, and others[4] as a special

4. Marshall, *Principles of Economics*, 8th edition; Hicks, J. R., *Value*

case which assumes constant marginal utility of money to the individual purchaser, and that strictly speaking this assumption is seldom, if ever, correct. As pointed out by Hicks, changes in prices of a commodity or service may influence the demand for that commodity or service by changing the "real income" of the consumer, with results similar to those indicated by income-consumption curves, on the one hand, and by increasing the substitution of the lower-priced for the higher-priced commodities or services, with results similar to those indicated by price-consumption curves, on the other. Measures of consumer's surplus based on the assumption of constant marginal utility of money leave out of account this income-consumption effect of price changes.

Changes in the marginal utility of money to the consumer attributable to changes in prices of a commodity or service vary with the proportion of his total expenditures that goes for this commodity or service. Marshall neglected the income effects of these changes on the basis of the assumption that the proportion of the consumer's total expenditures that goes for a particular commodity or service usually is so small that any influence of changes in prices of the commodity or service on the real income of the consumer would be insignificant.[5] Hicks, however, pointed out that, even if the proportion of the total income spent upon the commodity or service is small, the income-consumption effects of price changes may be important if the consumer's surplus is large, so that the loss of the opportunity of buying the commodity or service is equivalent to a large loss of income. Ordinarily, for most commodities, the income effects supplement the substitution effects of price changes on consumption, but for so-called "inferior" goods, for which expenditures vary inversely with incomes, the income effects tend to offset the substitution effects of price changes on the consumer's demand.[6] The total effect of price changes on the consumer's demand is the algebraic sum of the income and substitution effects.

Dr. Waugh's statement (page 604) that "Using the Dupuit-Hicks interpretation, then, we might say that if the consumer paid a tax of G dollars (referring again to Figure I), when the price was

and Capital; Stigler, George F., The Theory of Competitive Price; and Joseph, M. F. W., "The Excess of Burden of Indirect Taxation," Review of Economic Studies, Vol. VI, No. 3.

5. Marshall, op. cit., page 842.
6. Hicks, op. cit., Chaps. II and III.

low, and if he received a bounty of L dollars, when the price was high, he would be just as well off as if prices remained always at P_0" appears not to take into account all the possible income effects of price changes on the consumer's demand. A demand curve for a so-called "inferior" good, based on Marshall's assumption, might slope downward to the right, when at the same time the income effect of a fall in prices may equal or exceed the substitution effect, so that the quantity demanded might not increase with a decline in prices.[7] But obviously this is a narrow point.

In conclusion, I would like to express my admiration of the masterly way in which Dr. Waugh presented his new theorem. But a demonstration that the stabilization of prices at or above the simple arithmetic mean would reduce the average consumer's surplus, or a similar demonstration that the stabilization of prices at or below the weighted average would increase the average consumer's surplus, or a combination of the two, would not supply an adequate basis for a satisfactory answer to the question, "Does the consumer benefit from price instability?". The influence of price stabilization on the welfare of consumers would obviously depend upon the level at which prices were stabilized. The level at which it would be feasible to stabilize prices of a particular commodity or service would depend upon the influences of such stabilization on incomes to producers, on the quantities produced and consumed, and on other important considerations, as well as on the consumer's surplus. These facts may help to explain why many economists are "rather skeptical" of the conclusion, based on Dr. Waugh's new theorem, that ". . . consumers are harmed by price stability, and that they benefit from instability of prices."

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7. Hicks, op. cit.

FURTHER COMMENT

In a recent paper (this JOURNAL, August, 1944, page 602) F. D. Waugh presented the theorem that "... in a certain sense at least, consumers are harmed by price stability and that they benefit from instability of prices."

The theorem is proved by comparing consumer's surplus in two alternative situations: first, one in which the price is stabilized at the simple arithmetic mean $p_0 = \dfrac{p_1 + p_2}{2}$ in each of two periods; second, one in which the price would be p_1 in the first period and p_2 in the second. The areas marked "L" and "G" in his diagram[1] represent, respectively, the loss and the gain in consumer's surplus in the first and second periods, as compared with the situation where the price is stabilized at p_0[2] for both the periods. There is no doubt that in all cases where the demand curve slopes downwards from left to right the area "G" must be larger than the area "L," indicating that consumers will be better off, if prices fluctuate, then if they are stabilized at p_0.

The theorem is also stated for one single consumer in terms of indifference curves. The assumptions are the same as before: the consumer is free to distribute expenditure over time as he pleases, and the comparison is again made between a situation where the price of commodity A is stabilized at p_0 and a situation where prices fluctuate about p_0. Commodity A is shown on the x-axis, and the spendable income, or "all other goods," the prices for which are kept stable, are shown on the y-axis. It can be demonstrated that if the price for commodity A is allowed to move up and down about p_0, the consumer is able to reach higher indifference curves than he would reach if the price for commodity A were stabilized at p_0. From this analysis the conclusion is drawn that, under the assumptions made, the consumer will be better off "if all prices vary than he would be if all prices were stabilized at their respective arithmetic means."

This statement requires further qualification. It seems to hold

1. P. 288, above.
2. p_0 will be used throughout this note to indicate the simple arithmetic mean.

true only so long as prices do not all move in the same direction at the same time, and the relative prices were thus different in different periods. If prices move in the same direction, the consumer may either keep his total consumption stable by spending a larger proportion of his income in the period of high prices and a smaller one in the period of low prices, or he may increase consumption, when prices are low, being "better off" in that period, and reduce consumption and be "worse off," when prices are high — he could not be better off in both the periods.

For practical purposes we cannot very well assume that an increase or decrease in the price of one good leaves the prices of other goods unaffected. Such an assumption will be still less correct if we narrow down the range of commodities considered to a single group of more or less close substitutes — say, wheat on one side and "other cereals" on the other. The resulting shift in demand as prices for one commodity rise or fall will necessarily cause the prices of substitutes to move in the same direction. In that case, no advantage arises for the consumer, if prices fluctuate round their arithmetic mean.

The theorem that, under the assumptions stated above, consumers would be harmed by price stabilization could also be proved with reference to the average price per unit of the total amount purchased in either of the two situations. It is evident that the average price per unit purchased, both for all consumers in the aggregate and for every single consumer, will be higher, if the price is stabilized at the simple arithmetic average, than it will be if prices fluctuate. This will be true so long as consumers are able to distribute purchases among the two (or more) periods in such a way as to buy more of the commodity in question when prices are below p_0 and less when they are above it.[3] If, however, the price were stabilized at a weighted average — let us call it P[4] — which takes account of the quantities that would be purchased

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3. Obviously the reasoning refers to commodities that are not storable by the consumer from one period to the other. If they were storable, he would buy the total quantity for both (or all) the periods at the lowest price, and the theorem would be reduced to the trivial statement that consumers are better off when prices are lower.

4. P would be $\dfrac{p_1q_1 + p_2q_2 + p_3q_3 + \cdots p_nq_n}{q_1 + q_2 + q_3 + \cdots q_n}$

at the various prices that would otherwise prevail, the harmful effect on the consumer would be avoided.[5]

There remains the question whether we have any special reason for assuming that the simple arithmetic average is the level at which prices should be stabilized. There is certainly no such reason from the side of the consumer; let us briefly consider the producer's side. The stabilization of prices at the simple arithmetic average would increase the producer's receipts per unit sold, while the stabilization at the weighted average would leave his receipts unchanged. If, as is usually argued, stabilization, as such, is beneficial to the producer — whether by reducing risk or by lowering costs — it does not seem necessary to further improve his situation by increasing receipts per unit sold. Hence there is no a priori reason why prices should be stabilized at their simple arithmetic average. The validity of Waugh's theorem depends, however, on that specific assumption. What has been proved, therefore, is not that stabilization as such is harmful for the consumer, but stabilization at an arbitrarily defined level (however reasonable that level seems to be at first sight).

Price stabilization, as it has been discussed and recommended recently, is mainly intended to eliminate or narrow down violent price fluctuations for primary products, due either to fluctuations in the supply (e.g. as the result of good or bad harvests), or to fluctuations in the demand (resulting mainly from cyclical fluctuations in industrial countries). In the first case it can be assumed that price fluctuations for one commodity due to changes in its supply do not, as a rule, affect consumers' incomes; consequently, the author's assumption that consumers are free to distribute expenditure between the two periods as they please may hold. Hence it is possible to assume, as Waugh does, that the demand curve for the commodity in question will be the same in both periods. In order that the stabilization of the price should not harm the consumer, it would have to be stabilized at (or below) the weighted average, not at the simple arithmetic average. As regards the producer, we have already pointed out that stabilization at this level would leave the average receipts per unit of the output unchanged; in terms of gross returns the producer

5. With the price stabilized at its weighted average, the two areas "G" and "L" in Waugh's diagram will be equal, indicating that the gain and the loss in consumer's surplus effected through stabilization would cancel out.

would be as well off as before. How the total quantity consumed at the stable price P will compare with the quantity that would be consumed if prices were fluctuating will depend on the position and slope of the demand curve: the quantity will be the same if the elasticity of demand is unity throughout the whole curve; it is likely to be smaller if the demand is less elastic above and more elastic below P, and it will be larger if the elasticity is higher above than below P. The latter situation will be the rule, since the elasticity of demand generally decreases with increasing quantities. The total quantity consumed at the stable price P will therefore be larger than the quantity consumed under unstable conditions; in other words, stabilization at the weighted average will be accompanied by an increase in the total consumption of the commodity.

Turning to the other reason for price fluctuations mentioned above — cyclical fluctuations in demand — we can no longer assume that the demand curve will be the same in both periods. The "depression" curve will be further to the left than the "prosperity" curve. If the former shifts so far to the left (and/or becomes so inelastic) as to result in a demand which is smaller at the low price than the demand at the high price during prosperity,[6] consumers would obviously be better off if the price were stabilized at the simple arithmetic average, both as compared with instability and as compared with stabilization at the weighted average, the latter in this case being higher than the simple arithmetic average. The situation is illustrated in Figure I. It may seem, therefore, that in this case stabilization at the simple arithmetic average would be preferable. It would obviously benefit the consumer; on the other hand, it would reduce receipts per unit of output for the producer below what he would obtain under price instability, and would thus make him "worse off." In this case, stabilization at the weighted average may have to be adopted in order not to harm the producer.

How great will be the quantity consumed at the stable price P, compared with the quantity consumed under unstable conditions, will again depend on the relative elasticities of the two demand curves in their relevant parts. If the elasticities of both curves

6. This was actually the case for many industrial raw materials in the depression of the early 'thirties, as compared with the situation in and before 1929.
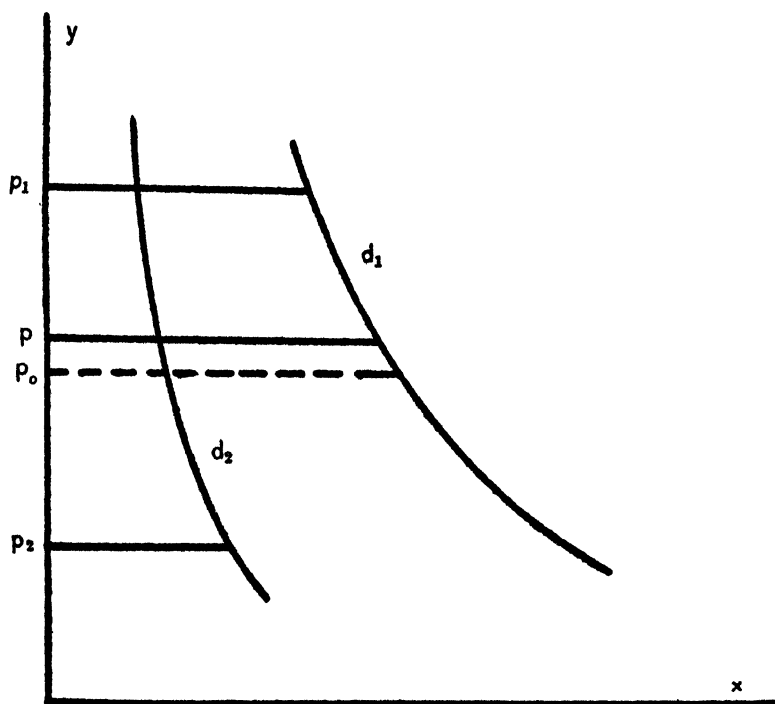
FIGURE I

are unity, the quantity consumed will be the same in both situations; if the left hand curve is more elastic below P than the right hand curve above P, the quantity consumed will be smaller, while in the opposite case it will be larger than under unstable conditions. No a priori statement can be made, however, as to the likelihood that one or the other situation will prevail; the quantity consumed, if the price is stabilized at P, may be equal, smaller, or larger than it will be when the price fluctuates.

Obviously the possibility of stabilizing the price at or below P depends on the cost structure and on the effect stabilization will have on the cost per unit of output; we are not analyzing here the producers' side, and we have argued under the simplifying assumption that cost will be covered by keeping the average price per unit of output constant. Our only object has been to indicate the upper limit of the price at which stabilization could be carried out without harming the consumer.

In the first case considered here, which is obviously the one to which Waugh's assumptions concerning the demand curve refer, stabilization at the weighted average, since it would most probably be accompanied by higher consumption, would benefit rather than harm the consumer. In the second case, stabilization at the weighted average may result in smaller total consumption. Hence, if it is desired to keep up the level of consumption of the commodity in question, the price would have to be stabilized at a level below P.

GERTRUD LOVASY.

PRINCETON, N. J.

REPLY

My paper attempted to show that stabilizing the price of a commodity *at a level equal to, or higher than, the arithmetic mean of the unstabilized prices* is harmful to each individual consumer. I certainly did not intend to say that consumers would be harmed by *any* price stabilization, regardless of level.

The main point of the papers by Dr. Howell and by Miss Lovasy seems to be that stabilization at some lower level might benefit consumers. This, I think, is obviously true.

I wish that both Dr. Howell and Miss Lovasy had developed further the point that consumer's surplus would be increased if prices were stabilized at, or below, the weighted mean of the unstabilized prices. Both of them made this point incidentally, but they greatly subordinated it. To me it seems the most significant part of their papers. Dr. Howell's footnote 3 could easily be expanded to prove this point for the general case, with any number of prices.

I am glad, also, to accept Miss Lovasy's qualifications that my theorem is strictly true only if demand is stable, and if prices of different goods do not vary in constant ratio to one another.

With these qualifications, however, I think the effect of the two papers is to add to my statement. It might be reworded thus: *"Let the price of any commodity or service in n equal periods of time be p_1, p_2, $\cdots$ p_n. Assuming that demand is stable and that the demand curve slopes downward to the right, stabilization of the price at or above the simple arithmetic mean, $\frac{1}{n}(p_1 + p_2 \cdots p_n)$, would*

reduce the consumer's surplus of each individual consumer, while stabilization of the price at or below the weighted mean,

$$\frac{p_1q_1 + p_2q_2 \cdots p_nq_n}{q_1 + q_2 \cdots q_n}$$

would increase the consumer's surplus of each individual consumer."

I believe this restatement should be considered carefully in connection with consumer aspects of price stabilization. For example, consider a simple numerical case in which the prices are $p_1 = 20$ cents, $p_2 = 30$ cents, and in which the corresponding quantities purchased are $q_1 = 3000$, $q_2 = 2000$. Then we have shown that stabilization at or above 25 cents means a loss of consumer's surplus to each consumer — and that stabilization at or below 24 cents means a gain in consumer's surplus to each consumer.

Dr. Howell reviews some of the arguments about the inaccuracy of consumer's surplus as a measure of welfare. The first sentence of his fourth paragraph implies that my conclusions were based solely upon the consumer's surplus analysis. The reader can verify the fact that my Sections III and IV do not depend in any way upon consumer's surplus. They would be valid even if it could be shown that there is no such thing as consumer's surplus.

However, I would contend that my use (and Dr. Howell's use) of consumer's surplus is legitimate. Granting the well-recognized fact that an exact measure of welfare would require an adjustment of the demand curve to compensate for "income effects," the adjustment would ordinarily be small; and in any case the "corrected" consumer's surplus would always be reduced if prices were stabilized at the arithmetic mean.[1]

Using the concept of a corrected consumer's surplus as a measure of welfare, then, I believe we can say that stabilization

1. The latter part of this sentence is not obvious, and goes beyond Hicks' conclusion (on page 41 of Value and Capital). I shall not attempt an elaborate proof here, but the general lines of proof perhaps should be indicated. Let the consumer buy q_0 at the price p_0. If the price be lowered from p_0 to p_2, and if at the same time the consumer's income is reduced by $q_1(p_0 - p_2)$ dollars, he will be better off than before. In this situation he could, if he chose, buy the same quantities of all things as before, but he could always reach a better position on the indifference surface. His real ("corrected") gain, therefore, is always *greater* than the rectangle, $q_1(p_0 - p_2)$. Similar reasoning shows that his loss when the price is raised from p_0 to p_1 is always *less* than the rectangle, $q_1(p_1 - p_0)$. In my diagram, where p_0 is the arithmetic mean of prices, the "corrected" area, $G-L$, representing net gain from *instability*, is always positive. This is true even in case of the demand for an extremely inferior good.

at, or above, the arithmetic mean of prices *harms* every consumer, and that stabilization at or below the weighted mean *benefits* every consumer. In any case, the first part of the statement is apparently correct, since it can be proved by indifference analysis without making use of consumer's surplus at all — whether corrected or not.

Miss Lovasy's comments on the producer aspects of price stabilization are interesting, and indicate that profits to the producer depend upon many factors. My own observation of price stabilization operations is limited to some of the domestic and international agricultural programs. I think it is fair to say that these programs have been promoted mainly by producers who are interested in stabilizing prices at what they consider a "reasonable" level. I doubt if such groups would be interested in stability at the weighted average price or less. I am inclined to think they would aim at a level at least as high as the arithmetic average price.

FREDERICK V. WAUGH.

WAR FOOD ADMINISTRATION

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CROCE AND THE NATURE
OF ECONOMIC SCIENCE

SUMMARY

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I. Purpose and Basis of the Article

In August, 1943, Professor Scoon concluded an article on "Professor Robbins' Definition of Economics"[1] with the statement that the definition developed by Robbins included more than he was "yet prepared to assign it [economics]." On reading this article, the following questions occurred to me. Is economics our slave or our master? Is it a pie which every economist can stretch at will and even make up with his own "recipe," or is it a given pie which can be dressed in various ways, but which is basically made up of well defined and hardly changeable ingredients? In other words, is economics what the economist is prepared to let it be, or does economics have a "nature" of its own, which the economist must reckon with while following his purpose of obtaining guidance in economic life?

It is my opinion that the second alternative is true. Of course, this does not mean that practical aims should be disregarded by the economist. It means only that, in order to avoid what Professor Scoon calls "excessive width" of economic science, the economist is not allowed to make a pie of the kind and dimensions that he likes best; he must be content with the kind of pie which is available and take from it the few slices which he can digest. It also

[1] Journal of Political Economy, August, 1943, pp. 310–320.

means that, in discussions concerning Robbins' or any other definition of economics, the emphasis should lie primarily on the "nature" of the pie called "economics," on its basic ingredients — the most important of which is the "economic principle" — and on the number of slices which the economist can afford to eat. The fulfillment of our practical purposes can be best furthered if economics is approached in this way.

I consider Robbins' definition of economics as "the science which studies human behavior as a relationship between ends and scarce means which have an alternative use,"[2] a fundamental one, because it states strongly and unequivocally, for the first time, the fact that economics has a specific "nature" — a "nature" which the economist must reckon with, in order to understand correctly and to solve properly any economic problem, scientific as well as practical. Before Robbins explained the "nature" of economic science, it was still possible for the economist to hold to the so-called "materialist" definition of economics, or to similar ones. (According to Cannan's "materialist" definition, "economic science is concerned with the causes of material welfare," and "the political economy of war is a contradiction in terms.") Similarly, before Robbins' definition, criticism of economics on the ground of its being "too wide" or "too narrow" was still understandable. Now, however, such discussions have become meaningless: economics is a given pie, which the economist is only allowed to dress a bit, to cut as deeply and into as many parts as he wishes, and to eat according to his need.

In spite of my substantial agreement with Robbins' definition, I can understand why both the layman and many students and teachers of economics still follow Cannan's or other similar approaches, rather than that of Robbins. The dogmatic way in which Robbins' definition of economics is presented, the complete lack of explanation of the basis on which it rests, make it appear "one more" definition of economics, not "the" definition. In other words, Robbins does not succeed in dispelling the widespread impression that the discussions concerning the nature, scope and method of economics are merely an endless and useless logomachy. This is due to the fact that Robbins, like all of his predecessors, still unravels a "skein" of which he does not possess the "leading

2. An Essay on the Nature and Significance of Economic Science, p. 16.

thread." In the following pages I shall try to disentangle this "leading thread," in the light of Benedetto Croce's economic thought and philosophy.[3] My conclusions — if they are correct — will provide Robbins' definition with an anchor to protect it against scientific storms; will suggest some ways of improving Robbins' definition, and will outline the effects which the use of the improved definition is expected to have upon the study of economic science, as well as on the understanding of the history of economic thought.

II. Croce's Intellectual Development[4]

As far as the explanation of the meaning of economic science is concerned, Croce is in a unique position. He did not start as a philosopher. He reached philosophy through a parallel study of aesthetics and economics. His philosophy, in a sense, is a projection of his aesthetics and of his economics. This is perhaps the main reason why an interpretation of the meaning of economic science can be derived from his philosophy.

Croce was born in 1866. Between 1881 and 1884 he became acquainted with the books which were to be the starting point of his intellectual development—de Sanctis' works on literary history. It is important to remember that de Sanctis' views on aesthetics — an outcome of Vico's philosophy — are the point of departure of Croce's thought; that his views on aesthetics are the very background of Croce's aesthetics; and that these views became the point of departure of Croce's "Economics" and of other

3. As direct and indirect complementary sources of my point of view, I could also quote G. B. Vico's Scienza Nuova (Croce has been greatly influenced by Vico's philosophy) and Galiani's "Della Moneta" and "Dialogues sur le commerce des blés." Excerpts from Galiani's books have been printed in my volume, Economisti Napoletani dei Secoli XVII e XVIII, Bologna, 1937, in which I demonstrate how, as a consequence of his reading Vico, Galiani had by 1751 already fully explained that "paradox of value" which, decades later, was to cause so much trouble to Smith and Ricardo. I also demonstrate that Galiani was the first economist to mention "value" as an outcome of "utility" and "rarity"; that on "subjective value" he was deeper — although less specific — than Menger; that Menger owes him much more than he declares; that Galiani was the founder of the modern ("agio") theory of interest; that before Böhm Bawerk nobody surpassed him on this subject; and finally, the theme of this article, that he understood quite exactly the relationship between economic science and practical economic problems.

4. Except as otherwise indicated, the data and quotations contained in this and in the next section are taken from Croce's Contributo alla critica di me stesso, Naples, 1918.

parts of his philosophy, which perhaps are not so well known as his aesthetics.

The leading idea of Croce's aesthetics, in his own words,[5] is:

> All human characters, all actions, all objects, in their entering the realm of art lose (artistically speaking) the qualities which they usually have, for different reasons, in real life; and *are judged only in so far as art depicts them more or less perfectly.* Caliban is a freak in life, but is not a freak as a figure of art.
>
> Before an object — a man; an action or an event — the human spirit can perform but one of the following acts of knowledge. Either the human spirit can ask itself: What is it? Or it can look at that object as something which simply appears to it. The human spirit either wishes to *understand* it or simply to *see it.* It either submits it to a scientific (philosophical) elaboration or to an artistic one.

These sentences — written in 1893, but anticipated since 1881–84, when Croce became acquainted with de Sanctis' works — *explain the very nucleus of Croce's aesthetics* (the study of a "primitive" and "intuitive" kind of knowledge) and give a clear view of the two aspects of Croce's philosophical system which are concerned with "knowledge," namely, *"Aesthetics"* — the study of "primitive" and "intuitive" knowledge — and *"Logic"* — the study of full knowledge. I shall explain the meaning of these statements later, from the point of view of this article.

In 1885 Croce attended Labriola's course on Moral Philosophy at the University of Rome. This, as he has said, led him to "labor at the ideas of pleasure and duty, purity and impurity, actions rendered attractive by the purely moral ideal and *actions endowed with an apparent moral value* by psychological association, habit, or the impulse of passion." I should like to underline the distinction between "actions rendered attractive by the purely moral ideal" and "actions endowed with an apparent moral value by the impulse of passion." This distinction reflects very clearly the point of departure of the two aspects of Croce's philosophical system which are concerned with "human actions," namely, on the one hand what Croce will later call *"Economics,"* in the sense of *"Philosophy of Economy"* (the study of human actions from the point of view of their intention or "end"), and on the other hand what Croce will later call *Ethics* (the study of human actions from the moral-universal standpoint).

5. Il Concetto Della Storia Nelle Sue Relazioni Col Concetto Dell' Arte, 1893, published in Rome, 1896.

As a consequence of his reading of de Sanctis (1881–84) and of his attending Labriola's course on moral philosophy (1885) Croce was, by the end of 1885, already in a position to lay the foundations of his philosophical system, which may be summed up as follows:

(*a*) When "characters, objects and actions" are "judged in so far as art depicts them more or less perfectly" — in other words, when "the human spirit 'looks' at an object as something which simply appears to it" — we have what Croce will later call *"Aesthetics."*

(*b*) When characters, objects and actions are judged in their full reality — in other words, when the human spirit looks at an object in order to "understand" it — we have what Croce will later call *"Logic."*

(*c*) When actions are "endowed" with an "apparent" moral value by the "impulse of passion" — in other words, when actions are judged from a single point of view (the end, the "passion") — we have what Croce will later call *"Economics."*

(*d*) When actions are "rendered attractive by the purely moral ideal" — in other words, when we consider actions in their full reality — we have what Croce will later call *"Ethics."*

In this system composed of Aesthetics, Logic, Economics and Ethics — the foregoing are different aspects of a single philosophical system, which Croce will later call the "phaenomenology of conscience" — the parallelism between Aesthetic-Logic and Economics-Ethics is self evident. This explains why, in order to understand Croce's "Economics" (in a philosophical sense), it is necessary to know also his Aesthetics, Logic and Ethics; why the economists have always failed when they tried to understand Croce's economic thought through his "Economics" alone; and why so far Croce's philosophy and even economics has been of no use to economists.

III. THE TWO MEANINGS OF "ECONOMICS" IN CROCE'S WORK

In the foregoing, I have used the word "Economics" in a "philosophical" sense, without explaining the relationship between "Economics" in this sense, or "philosophy of Economy," and what Croce has called the "science of Economy." The two meanings, it is true, are not always very sharply distinguished from one another in Croce's early works. In his polemic with Pareto on the

"economic principle," for instance, he started speaking in terms of economic science and ended by speaking in terms of philosophy. This is one of the causes which make the interpretation of his thought on economic science so difficult. However, a sharp distinction between the two meanings of "Economics" in his works is perfectly possible; and since it is essential in this article, I shall try to clarify it by outlining his career as an economist.

In 1895 Labriola sent Croce his first essay on the materialist conception of history — an essay on the Communist Manifesto. Croce was deeply impressed, and for several months threw himself into the study of economics. He studied the classics of economics, and delved into socialist literature. He burned, for a while, with faith and political passion. Gradually, however, his faith was undermined by criticism, which he expressed in a series of essays written between 1895 and 1900 and later collected in a volume called Historical Materialism and the Economics of Karl Marx.[6]

By 1900 Croce had gone all the way from Marxism to what he calls "purist" economic science. This is demonstrated by the following conclusions which he reached in 1899, in one of the essays just mentioned:

(a) In order to understand the thought of Marx, one must place himself outside the boundaries of economic science.

(b) The scientific theory of value can be found only in the "purist" or "Austrian" trend.[7]

One might add that Croce had not only reached what he calls "purist" economic science, but was also preparing to go beyond it. The following statements demonstrate this point:

I adhere to the "purist school." However, while doing so, I like to put forward a few warnings:

First, I think that the philosophical concept of "value" is still unexplained; and that one should follow to the very end the path which economists have trodden only up to a certain point. . . . Finding the "primary economic fact," the "element which makes of economics an independent science," is an unsolved problem, which needs a solution.

Secondly, I think that pure economics must get rid of its illegitimate marriage with "economic liberalism," because economic liberalism is a very good moral-social-political creed, but it is not a scientific one. Therefore, one

6. Materialismo Storico ed Economia Marxistica, Bari, 1918.

7. "Marxismo ed economia pura," in Materialismo storico ed Economia Marxistica, pp. 177–178. This essay is not included in the English edition of Materialismo storico. . . . (Historical Materialism and the Economics of Karl Marx, New York, 1914.)

must let the "purists" in economics be whatever they want to be in any other field, without accusing them of being in contradiction with pure economics: in fact, the common acceptance of very general laws lends itself to different and even opposite practical and concrete programs.

Thirdly, I think that one must stop the mathematical falsification of economic principles. . . . The mathematical language may be the most appropriate in some cases, but it brings with it the danger of letting people think that the "economic concept" — which is mainly a concept of the preferable, the desirable, namely, something qualitatively distinct — is instead a quantitative concept.[8]

It is evident that Croce's intellectual background — Vico, de Sanctis, Labriola—had guided him quite soundly through his career as an economist. This career lasted exactly five years — from 1895 to 1900. There are four causes of its ending. First, after five years of intensive study and criticism of the Marxist economy, his need for further clarification of the subject was over. Second, as far as "purist" economics is concerned, he had reached — perhaps surpassed — the most advanced conclusions attained by any economist up to that time. The only way of going beyond that point would have been to delve into the philosophical background of economics. This is what he did, in a sense. Third, his point of arrival as an economist is his point of departure as a philosopher. His most advanced point in economic science — namely, his definition of the "economic principle" — became the very nucleus of his "Economics" (in a philosophical sense) and of his Ethics. Fourth, his main interest was a philosophical one. Once he had definitely reached — with the help of economic science — the point of departure of his "Economics" (in a philosophical sense) and of his "Ethics," he had in his hands the beginning of the skein of his entire system, which was his real aim. Therefore, he did not need, or feel inclined, to go back to economic science.

At the end of 1900 Croce was ready to start his work as a philosopher. In the fall of that year he wrote a pamphlet on Aesthetics; and in 1902 he published his famous Theory and History of Aesthetics. His book on Logic came out in 1905, and the one on his "Economics" and "Ethics," namely his Philosophy of the Practical, came out in 1908. Thus, by 1908, the little stone found by Croce between 1881 and 1884 and the cornerstone laid down in 1900 had become a complete building.

8. Materialismo Storico ed Economia Marxistica, p. 187.

IV. The Pareto-Croce Polemic
on the "Economic Principle"

Croce's shift from his work as an economist to his work as a philosopher went through a very interesting crisis — a kind of bridge between the two types of research. This bridge is represented by two articles which began in the field of economic science and ended in the field of philosophy — his contribution to the Pareto-Croce polemic on the "economic principle."[9] His point of view on the "principle which makes of economics an independent science," as set forth in the polemic, is summarized in the following quotations:

(a) Economics is a science possessing its own principle, which is indeed called the "economic principle". . . . I do not consider that the real meaning of this principle . . . has hitherto been grasped, nor adequately defined in relation to other groups of facts, that is, to the principles of other sciences.

(b) I state with certainty that the economic fact is not a mechanical fact, or that there is no transition from the mechanical aspect of a fact to the economic aspect. [This statement is an answer to the following statement by Pareto: "Pure economics employs the same methods as rational mechanics, and has many points of contact with this science"]. Do you wish for the simplest and clearest proof of the non-mechanical nature of the "economic principle"? Note, then, that in the data of Economics a quality appears which is . . . repugnant to those of mechanics. To an economic fact words can be applied which express approval or disapproval. Man behaves economically well or ill, with gain or loss, suitably or unsuitably; he behaves, in short, economically or uneconomically. A fact, in economics, is therefore capable of appraisal (positive or negative); while a fact in mechanics is a mere fact, to which praise or blame can only be attached metaphorically.

(c) This analysis . . . ought to lead us to conceive of the "economic fact" as an "act of man"; i.e., as "a fact related to human activity." . . . But as a fact of man's activity, there still remains to determine whether it is a fact of knowledge, or of the will; whether it is "theoretical" or "practical." You . . . [Croce says to Pareto] who conceive the "economic fact" as a choice, can have no doubt that it is a fact of practical activity, i.e., of will. This is also my own conclusion. To choose something can only mean to will it: but you somewhat obscure this conclusion when you speak of "logical" and "illogical" actions and place actions properly economical among the former. "Logical" and "illogical" bring us back to theoretical activity . . . . The logical work of thought is quite distinct from the act of will. . . . To "reason" is not to "will." . . . In knowledge, [what Croce means by "knowledge" is "science" as distinguished from "practical action" — the subject matter of the "Phi-

9. "Sul principio economico, Due lettere al Professor Pareto," in *Materialismo storico* . . . pp. 243–265. Pareto's answers can be found in the *Giornale Degli Economisti,* March, 1900, pp. 216–235, and August, 1900, pp. 139–162.

losophy of the Practical"] in so far as knowledge is the necessary presupposition to action, one can find, if not a justification, an explanation of your phrases about "logical and illogical action."

(d) Thus an economic fact is a fact of "practical activity." Have we attained our object in this definition? Not yet. The definition is still incomplete and to complete it we must . . . avoid another pitfall, namely, that of conceiving the economic facts as egoistic facts. An economic fact is quite different from an egoistic one. It does not form an antithesis to a moral fact; but is, with it, in the peaceable relation of condition to conditioned. The "economic fact" is the general condition which makes the rise of ethical activity possible. In the concrete, every action (volition) of man is either moral or immoral, since no actions are morally indifferent. But both the moral and the immoral are economic actions; which means that the economic action, taken by itself, is neither moral nor immoral.

(e) The economic fact is the practical activity of man, in so far as it is considered as such, independent of any moral or immoral determination. . . . Granted this definition, it will be seen also that the concept of utility, or of value or ophelimity, is nothing but the economic action itself, in so far as it is rightly managed, i.e., in so far as it is really economic. In the same way as the true is the thinking activity itself, and the good is moral activity itself. . . . And to speak of things (physical objects) as having or not having value, will appear simply a metaphoric usage to express those causes which we think efficacious to produce the effects which we desire and which are therefore our ends.

(f) To connect with these general propositions the different problems which are said to belong to economic science, is the task of the writer of a special treatise on economics.

(g) I said, and I repeat, that a judgment of approval or reprobation was necessarily bound up with economic activity: but a merely "economic" judgment of approval or reprobation. . . . Do you think that the acquisition and consumption of a bottle of Rhine wine involves no judgment of approval or disapproval? If I am rich, if my aim in life is to obtain momentary sensual pleasures, and I know that Rhenish wine will secure me one of them, I buy and drink Rhenish wine and approve my act. I am satisfied with myself. But if I do not want to indulge in gluttony, and if my money is all devoted to other purposes which I deem preferable, and if in spite of this, yielding to the temptation of the moment I buy and drink Rhine wine, I have put myself into contradiction with myself, and the sensual pleasure will be followed by a judgment of disapproval, by a legitimate and fitting "economic remorse." . . . In all this, I omit moral consideration.[1]

In order to see the meaning of these quotations more clearly, they may be summarized systematically. After declaring that the "economic principle" — the principle that "makes of economics an independent science" — had not yet been sufficiently well defined in relation to the principles of other sciences, Croce adds

1. Sul principio economico, pp. 244-245; 249-255; 262-263.

that the "economic principle" does not have a mechanical nature. The proof, according to Croce, is that to an economic fact words can be applied which express approval or disapproval, while this is not true of a mechanical fact. The first part of this statement is confirmed by the words: ". . . a judgment of approval or reprobation is necessarily bound up with economic activity," and is stressed by the example centered around the purchase of Rhine wine and by Croce's mention of an "economic remorse."

This is the most advanced point reached by Croce concerning economic science in his polemic with Pareto. It is important to notice that up to this point he had not crossed the borderline of economic science. When he spoke of an "economic remorse," he was still within this borderline; in fact, the "economic remorse" is a kind of "judgment of reprobation," something very similar to Pareto's calling certain actions "illogical," something which, as Croce says, "brings us back to theoretical activity." What Croce means here by "theoretical activity" is "science," as distinguished from "practical action," the subject matter of the Philosophy of the Practical.

What, then, makes Croce disagree so profoundly with Pareto, and why did not the polemic have any solution? We can safely say that the real cause of this disagreement is Croce's unconscious shift from science to philosophy; from "knowledge" to the "philosophy of the will" (or "philosophy of the practical"). Croce was discovering his "philosophy of the will" and forgetting his "economics."

Let us look clearly into this shift. It starts immediately after Croce's statement that "to an economic fact, words can be applied which express approval or disapproval," and is more and more apparent in the following passages:

> This analysis ought to lead us to conceive of the economic fact as an act of man; as a fact related to human activity; a fact, not of knowledge, but of the will; not a theoretical fact, but a practical one . . . this analysis ought to lead us to conceive of the economic fact as a fact of practical activity; however, not as a fact of moral activity, nor an egoistic one, but as an action which, taken by itself, is neither moral nor immoral; as the practical activity of man, in so far as it is considered as such, independent of any moral or immoral determination.[2]

To summarize: Croce's point of arrival in the Pareto-Croce polemic is a philosophic one; it is the very basis of his "philosophy

2. Ibid.

of the will" — otherwise called "philosophy of the practical."[3]
In other words, during the course of his explanation of the very
nature of the "economic principle" Croce shifted from the field
of knowledge (science) — his examples of the Rhine wine and of
the "economic remorse" belong to it — to the philosophy of human
action — to the very core of it, namely the "practical activity of
man."

This shift, although unconscious, does not lack an explana-
tion. There is, in fact, a kind of "bridge" between the "economic
principle," the "principle that makes of economics an independent
science," and "human action," the subject matter of the "phi-
losophy of the practical." This "bridge" does not seem to have
been discovered so far. The description of it will be the contribu-
tion of this article (1) to the solution of the unsolved Pareto-Croce
polemic, (2) to an explanation of the apparent contradictions
contained in Croce's point of view, (3) to an explanation of the
reason why Croce called part of his philosophy of the practical,
"economics" (no other philosopher that I know uses this word in
his study of moral philosophy), and (4) to the explanation of the
"principle that makes of economics an independent science." In
fact, this bridge between "economic science" and "economics in a
philosophical sense" is the beginning of the road from philosophy
to economic science, what I have called the "leading thread of the
skein of economic science." Why this is so will now be explained.

V. The "Philosophy of the Practical" and Economic Science

In order to explain this connection we should have to start
from an explanation of Croce's point of arrival in the Pareto-Croce
polemic, which is also the cornerstone of Croce's "Philosophy of
the Practical," namely, the philosophical concept of "economic
action" — or simply, "action": the "practical action of man, in
so far as he wills and effects what corresponds to the factual con-
ditions in which he finds himself."[4] It is impossible to go into this
detailed explanation here; but since we cannot proceed without a
rough idea of the meaning of "action" in Croce's philosophy, I
shall sum up in a few words the outcome of his books on Aesthetics,

3. "Economics" and "Ethics." Their study is contained in the book
bearing the simple title, Philosophy of the Practical (London, 1913).
4. The "moral act," instead, (according to Croce) is the "act of man,
which although it corresponds to these conditions, also refers to something
which transcends them." (Philosophy of the Practical, p. 313.)

Logic and the Philosophy of the Practical (Economics and Ethics).

"Economic action" or "practical action" of man, or simply "action," according to Croce, is a "synthesis of intention and volition," a "synthesis of intention and action," or, more simply, a "synthesis of the means and the end."

The meaning and importance of this definition appears very clear from the example of the Rhine wine, to which reference has already been made:

> If I do not want to indulge in gluttony, and if my money is all devoted to other purposes which I deem preferable, and if in spite of this, yielding to the temptation of the moment, I buy and drink Rhine wine, I have put myself into contradiction with myself and the sensual pleasure will be followed by a judgment of disapproval, by a legitimate and fitting "economic remorse."

Here Croce has in mind what could be called an "economic program," namely, a set of ends to which the given means should be devoted. In other words, he is thinking in "abstract" terms; he is in the realm of economic science. What he calls the "temptation of the moment" — buying and drinking Rhine wine in spite of the "economic program" which does not allow this action — gives us the clue we are seeking.

This "temptation of the moment" lends itself to three completely different interpretations — the first, economical, the second philosophical, the third, between the economical and the philosophical. The third interpretation is the one which allows us to grasp the "leading thread of the skein of economic science."

1. From the point of view of "economic science," we call the action of buying Rhine wine "uneconomical," in case all the money, according to a given program, is allocated in advance to other purposes which do not include it.

2. According to the philosophical interpretation, we cannot call the action of buying and drinking Rhine wine "uneconomical." This action is just a synthesis of means — the money — and ends — the desire of the moment — so there cannot be any unfavorable judgment of any sort. In other words, when I talk in terms of philosophy, I do not deal with abstractions, but with full reality (the buying of Rhine wine, because I like to do so, is full reality); I do not compare a real action (the buying of wine) with an abstract end (the "economic program"), but merely with its end. Therefore, when I talk in terms of philosophy, I cannot speak of "temptation of the moment." What is called "temptation of the

moment," according to the philosophical interpretation, is just an action, a "synthesis of the means and the end."

3. Finally, there is the third interpretation of the expression, "temptation of the moment," the interpretation which lies between the economic and the philosophical one. What I have called the "economic program" does not necessarily have to be a long-range program. Instead of referring to a year, a month, a week or day, it may refer to an hour or an instant. In this way we can see that if we refer to one hour, or better still, to an instant, what we have called "temptation" from the point of view of the long-range program, would cease to be one: it would just become the end for that hour, or for that instant. In other words, if we consider a program sufficiently short, we can reach a situation very similar to the real one — the situation which is studied in the Philosophy of Action. In this case, the latter can be considered as the "limit" situation, which, as we shall see, is the "leading thread of the skein of economic science."

In order to facilitate clear conclusions on this point, the foregoing example may be stated in simpler terms:

(*a*) "Real action" is a "synthesis of means and end." In other words, in "real action" the means and the end are always identical; no distinction between the "means" and the "end" is conceivable; no criticism, no "judgment of reprobation," no "remorse" is possible. From this point of view, there can be no objection to buying and drinking Rhine wine.

(*b*) The situation is very different with reference to the real or "abstract" purchase of Rhine wine, as compared with an economic program which does not contemplate it. Here we artificially create an end, and therefore separate it from the means. Here the "means" is not necessarily identical with the "end." Here, even if we have in mind a given allotment of money for the fulfillment of a given economic program, the actual purchase may be different from the abstract one. Here a "judgment of reprobation" is possible — what was called the "temptation." Here one can talk of an "economic remorse," in so far as "the human spirit," to quote Croce, "naturally aims at continually attaining the possession of itself." Here, a "tendency toward identity" arises, as a substitute for the "natural identity" of means and end which constitutes "real action." This "tendency toward identity" aims at seeing that given programs be respected; that wine not be bought,

fronted with the problem of dispelling the wide-spread confusion
between what he calls "philosophy of economy" (i.e. economics
from a philosophical point of view) and what he calls "science of
economy" (i.e. economic science). In trying to solve the problem
of the relationship between "philosophy of economy" and "science
of economy" Croce was brought to compare the "science of econ-
omy" — i.e. economic science — with philosophy, with the em-
pirical science, and with mathematical science. We shall follow him
in this discussion.

Concerning the relationship between the "science of economy"
and the "philosophy of economy," Croce says:

> If the economic actions of man be considered in their uncontaminated and
> undiminished reality, with an eye free from any prejudice, it is never possible
> to establish even a single one of the concepts and laws of economic science.[6]

6. Croce's demonstration of this point is as follows: "Every individual
is different at every moment of his life; he wills always in a new and different
way not comparable with the other modes of his or other's willing. If *A* spent
seven soldi to buy a loaf of bread yesterday, and today spent the same amount
in making the same purchase, the seven soldi of today are not for this reason
those of yesterday, nor is the bread the same as that of yesterday, nor the
want that *A* satisfies today the same as that of yesterday, nor is the effort
that his action costs him identical with that of yesterday. If individual *B* also
spends seven soldi for a loaf of bread, the action of *B* is different from that of
A, as that of *A* of today was different from that of yesterday. If we lead the
economist onto this ground of reality (or rather to the side of this Heraclitean
river in which it is not possible to dip the same hands twice in the same water)
he will feel himself lost, for he will not find a basis for any of his theories. *The
value of a piece of goods* (says a theorem of Economy), *depends upon the quantity
of it and of all the other goods that are upon the market.* But what does 'goods'
mean? Bread, for example, or wine? In reality, abstract bread and wine do
not exist, but a given piece of bread; a given glass of wine, with a given individ-
ual who will give a treasure or nothing in order to eat the one or to drink the
other, according to the conditions in which he finds himself. . . . *Any sort of
enjoyment, when protracted, decreases and finally dies out.* . . . That is the law of
Gossen, one of the foundation stones of economic theory. But what are these
enjoyments that are protracted, that decrease and end by dying out? In
reality there exist only actions which assume different positions at every
moment, owing to the continual changing of surrounding reality in which the
volitional individual operates. The difference is qualitative, not quantitative.
If individual *A* eats the bread that he has bought for seven soldi, when swal-
lowing the second or the tenth or the last mouthful, he has a pleasure not
inferior to that which he had when swallowing the first, but different: the
last was not less necessary for him, in its way, than the first; otherwise he
would have remained unsatisfied in his normal want, in his habit or in his
caprice. *The economic man seeks the maximum of satisfaction with the least
effort.* . . . That is the very principle of economy, but neither does this prin-
ciple correspond with reality, simple and general though it be. Individual *A*
disputes for an hour, in order to save two soldi in the purchase of an object for

According to Croce, it is evident, the subject matter of economics is not "real action," as is the case with philosophy. Therefore economics is not philosophy but science.

If economics is not philosophy but science, there remains to inquire what kind of science it is. To the question *whether or not economics is an "empirical science,"* Croce's answer is, again, negative. "Economic science," he says, "is not descriptive, and is not developed according to the following formula: goods are divided into classes a, b, c, d, and class a is exchanged with class b in the proportion of one to three, class b with class c in the proportion of one to five, etc."[7]

If economic science is neither philosophy nor empirical science, what is it? Let us follow Croce in detail:

> The propositions of the Science of Economy are rigorous and necessary. "Granted that soils of different degrees of fertility are cultivated, their possessors will all obtain, besides the absolute rent, a differential rent, with the exception of the possessor of the least fertile soil" (Ricardo's law). "Bad money drives out good money" (Gresham's law). Now, it is not conceivable in any case that soils of different fertility, all of them cultivated, should not give a differential

which he has been asked ten lire, thus attaining the maximum satisfaction for himself with the least means that is naturally at his disposal on that occasion. Individual *B* boasting of his magnificence, lights his cigarette with a banknote of a hundred lire, thus likewise attaining for himself the greatest satisfaction to which he aspired, with the least means that he possessed, namely, by burning that bill. But if this be so, we have here a question, not of greatest and least, but of individual ends and of relative means adopted, or (owing to the unity of means and ends already noted), of actions individually different."
See Croce's Philosophy of the Practical, pp. 365–368.
7. Croce's explanation of this point is as follows: "Certainly it is possible to abstract in greater or lesser measure from the infinite variety of actions and to construct a series of types or concepts of classes and of empirical laws, thus rendering uniform the formless, within certain limits. Thus is obtained the concept of bread and of consumption of bread, and of the various portions of bread and of other objects, for which a portion of bread can be exchanged, and so on. In this way full philosophical historical reality and the method of logical necessity and of realistic observation of facts are abandoned for a feigned reality and for a method of arbitrary choice which, as we know, has its raison d'être in the human spirit, and does great service by the swift recall and easy control of the requisite knowledge. And if economy consisted in the establishment of a series of laws and examples in the above sense (or when understood in this way), it would join the number of the descriptive disciplines; and in that case there would be no necessity for us to speak of it further, for it would suffice to refer back to what has already been said of the relations of the philosophy of the practical with practical description, classes, rules and casuistry. But economic science is not descriptive. . . ."
See Croce's Philosophy of the Practical, pp. 365–369.

rent. It may be said that the state can confiscate the differential rent, or that the possessor, owing to his bad cultivation or to his bad administration, may lose it, but the proposition does not remain less sound on this account. Nor is it possible that, when an inconvertible paper money is in circulation, gold coins should also circulate indiscriminately and on a par with it, when the total of the money in circulation lowers the value of the monetary unit beneath the metallic value of the money. A madman who might be in possession of a hoard of gold pieces at the time of the circulation of the declining paper money would perhaps give it in exchange for the inferior money, but the wise man will keep it in his safe.

He then concludes:

> The economic proposition expresses rational necessity, not madness, which is irrational. . . . Those propositions, like all the others of economic science, are therefore not descriptions but theorems. . . . The denomination theorem makes us think at once of the mathematical disciplines, among which alone economic science can find a place. . . . Yes, the propositions of economic science are mathematical but they are not pure mathematics, for in that case they would be nothing but arithmetic, algebra or calculus. The propositions of economic science belong to the kind of mathematical disciplines called "applied," because they introduce into the paradigma of calculus certain data taken from reality, that is to say, taken from without the pure numerical conception. Economic science then is a mathematic applied to the concept of human action and to its subspecies. It does not inquire what human action is, but having posited certain concepts of action, it creates formulae for the prompt recognition of the necessary connections.[8]

8. Philosophy of the Practical, pp. 369–371.
Croce's explanation of this point is as follows: "It is not surprising that such propositions examined in their truth appear in one respect arbitrary and in another tautological. But it is not thus that they are examined, and it is not thus that propositions of mathematics are ever examined, for their value lies solely in the service that they render. Certainly Ricardo's law relating to land of varying fertility is nothing but the definition of lands of various fertility, in the same way that Gresham's law relating to bad money is nothing but the definition of bad money. The same may be said of any other economic law, as for example, that every protective tariff is destruction of riches, or that a demand for commodities is not a demand for labor, since these economic laws, like the preceding, are simply definitions of the protective tariff, of the demand for commodities, and of the demand for labor. And it could be proved of all of them that they are arbitrary, because the concepts of land, tariffs, commodities, money, and so on, are arbitrary, and because they become necessary only when that arbitrariness has been admitted as a postulate. But the same demonstration can be given of any theorem in geometry; since it is not less arbitrary and tautological, that the measure of a quadrilateral should be equal to the base multiplied by the height, or that the sum of the squares of a cathetic should be equivalent to the square of the hypotenuse. This does not prevent geometry from being geometry, or negate the fact that without it we should not have been able to build the house in which we dwell, nor to measure this star upon which we live, not the others that revolve around it or around which we revolve. Thus, it would be impossible to find one's way in empirical

A few lines below this definition, Croce explains that "it is very natural that economic science be called a sort of mechanics."[9] He also gives a second definition of economics:

The sum of abstractive operations effected upon the concept of will or action, which is thus quantified.[1]

This definition is also presented in the following form:

Economic science works with the concept of will or action, which it renders abstract and quantitative.

VII. CONCLUSION

It now remains to compare the definition of economics reached through our interpretation of Croce's thought with Robbins' definition, and to combine the two into a conclusive one. Following this conclusion, I shall outline some consequences which the use of our definition is expected to have upon the study of economic science, on the study of the history of economic thought, and on the application of economic science to practice.

(1) The definition of economics as "a mathematic applied to the concept of human action," and the two other definitions reported at the end of the preceding section, represent Croce's point of arrival in his attempt to define economic science in relation to other sciences. Although these three definitions are interesting in themselves, their full meaning becomes apparent only when our explanation of the word "action" is applied to clarify them. I have explained (in Section V) how the philosophical concept of "human action" projects itself into economic science to become the "economic principle" (or "principle of rationality"). We can therefore substitute "economic principle" for "human action" in the foregoing definitions. These definitions then become:

"*Economics is a mathematic applied to the economic principle,*" or "*a mathematic applied to the intrinsic law of the spirit which consists in its continuous aiming at the recognition of the closest possible*

reality without these economic formulae, and that which happened when economic science was still in its infancy, would happen again, namely, that by its means measures of government were adopted which were admirably suited to produce in the highest degree those evils which it was thought could be avoided by its help." (Philosophy of the Practical, pp. 371–373.)

9. Philosophy of the Practical, p. 374. This statement contradicts Croce's own criticism of Pareto's stand in the polemic. I have already said that Croce's criticism was solely due to his shift from economics to philosophy.

1. Philosophy of the Practical, pp. 374, 375.

closeness — or identity — of means and ends;" or, in simpler words, *"a mathematic applied to the rational relationship of means and ends;"*

"Economics is the sum of abstractive operations effected upon the rational relationship of means and ends, which is thus quantified;"

"Economic science works with the rational relationship of means and ends, which it renders abstract and quantitative."

All these definitions describe economics as "a" mathematical[2] science, the subject matter of which is the "economic principle" — the "rational relationship of artificially quantified means and ends."

We can now compare this point of view with Robbins' statement that economics is the *"science which studies human behavior as a relationship between ends and scarce means having an alternative use."* In this definition, I believe, Robbins did not mean to say only that economics studies a given kind of "human behavior," nor did he mean to stress the rather confusing word "behavior." In my opinion, the expression, "behavior as a relationship . . ." used by Robbins, is rather vague and unprecise, or should be an expression for "human action" in the sense of the *"economic principle,"* namely, of the "logical process aiming at the recognition of the greatest possible closeness — or identity, or rational relationship — of the means and the ends.[3] If this is so, the only difference between Robbins' definition and the one which we have derived from Croce is that, *on the one hand*, the latter is more general and does not specify, although it implies, that economics deals with "scarce" means having an "alternative" use, and, *on the other hand*, that Robbins does not explain the nature of economics among the various sciences, does not demonstrate the "mathematical" nature of economic science, and does not specify the process of "quantification" by which we transform real or hypothetical choices into quantitative expressions.

Our definition and Robbins' could both be improved by combining them as follows:

2. When Croce mentions mathematics in this connection, he does not necessarily imply that economics must be made up of numbers and formulae. Croce is not in favor of the purely mathematical treatment of economics, although, like Marshall, he recognizes its usefulness in various cases. See p. 324 above.

3. I do not think that Robbins reached a clear view of the "economic principle." However, the wording of his definition shows his striving for it. See also his article on "Live and Dead Issues in the Methodology of Economics." (Economica, August, 1938).

"Economics is the mathematical science which studies 'human action' in the sense of the 'economic principle,' namely, of the 'rational relationship' between quantified ends and quantified scarce means having an alternative use." This is the definition which we propose as the outcome of this study. Its advantages lie in its being philosophically grounded, although purely scientific, and in the fact that its philosophical basis might make it *"the"* definition, instead of *"one more"* definition. Furthermore, it is worth noting that this definition would more or less unify the points of view on economics held by Croce — a philosopher, by Pareto — an outstanding representative of mathematical economics, and by Robbins — representing a happy marriage between the best of the Austrian and the English schools of economics, and would go beyond them.

(2) As to the scientific and practical consequences of the new definition, only another article would enable me to give a clear picture of them. Here I shall limit myself to outlining the topics with which such an article would have to deal.

(a) Some economists to whom a previous draft of this article was submitted object that our definition of economics, as well as Robbins', would include "strategy" as well as "economics," and that, according to it, "economics" would not differ from "technology." To the first objection I would answer that, if the thesis developed in this article is correct, it becomes obvious that economics has a given nature which cannot be changed, and that the economist, instead of rejecting our definition or Robbins' as "too inclusive," has no other choice but to *accept the kind of pie which economics is and take from it the few slices which he can digest.*[4] As to the objection that, according to our definition, economics would not differ from technology, I have only to recall Robbins' answer.[5] In the future article which I hope to devote entirely to the scientific and prac-

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4. See Section I above. These few slices represent economics *stricto sensu*. So far no economist that I know has eaten the slices which he cannot expect to digest — the slices of economics in a wider sense which belong to strategy. Even Enrico Barone, a military expert and a great economist, never mixed the two. I should probably agree that the "economic" and the "strategic" problem have a similar nature. However, I should call economics an "elementary science" and strategy a combination of various disciplines.

5. Op. cit., second edition p. 35: "To use Professor Mayer's very elegant way of putting the distinction, the problem of technique arises when there is one end and a multiplicity of means, the problem of economy when both the ends and the means are multiple."

tical consequences of this one, it will be necessary to analyze the pie called "economics" as a whole and the various slices of which it is made. Perhaps it will be possible to recognize some of them as being more digestible by the economist. It will not be improper for the economist to concern himself with them alone, provided he never forgets the pie from which they were taken. In other words, the economist is allowed to study "economics of wealth" instead of "general economics," if he knows what "economics" and the "economic principle" are.

(b) The definition reached above (pp. 324-5) is not a point of arrival but a point of departure — the basis for a reëxamination of all the main concepts and principles of economic science. My definition of the "economic principle" would easily lead to distinguishishing what I should call the "economic judgment," namely, the "scientific activity which evaluates the relationship between means and ends, from the point of view of the economic principle." The "economic judgment," in turn, would lead us to define such concepts as "gain," "waste," "minimum effort," etc. Furthermore, Croce's concept of the *"physical stimuli,"* of *"pseudo-concepts,"* of the *"law"* and of *"moral precepts"* can be transformed into that of *aesthetical, logical, economic* and *ethical catalyzers,* and can lead, by analogy, to the introduction into economic science of the concept of *"economic catalyzer."*[6]

Anything which helps to make *human action* easier and to save time, energy, etc., is an "economic catalyzer." If from *"economics"* in a philosophical sense we shift to "economic science," where *human action* is replaced by the *"economic principle,"* an "economic catalyzer" is whatever helps to fulfill the "aim to identity" of the means and the ends. Following this definition it could be demon-

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6. Croce's philosophical system (Section II, above) is made out of *Aesthetics, Logic, Economics* and *Ethics.* According to Croce, the aesthetical, logical, economic and ethical activities of the human spirit are empirically furthered, respectively, by the use of *"physical stimuli"* (pictures, poems, music, the task of which is to help or keep or reproduce or create aesthetic intuitions), of *"pseudo-concepts"* (empirical science, the purpose of which is to help the process of knowledge and thought), of *"laws"* (in the sense of abstract volitions helping the human will) and of *"moral precepts,"* (which, although they are not moral truth in themselves, serve as a guidance toward moral behavior). Croce's concept of "law" is a very wide one; it could even extend to include "crystallized will" in the form of physical objects. These objects — goods, machines, etc. — could be called "economic catalyzers," in so far as they help "human action" — the subject-matter of economics, in a philosophical sense.

strated that every *concept* of economic science — goods, services, money, capital, trade, production, division of labor and the like — can be brought under the broader concept of "economic catalyzer." This logical and unified approach to economic theory would fill some gaps, would make some concepts clearer, and might also lead to some specific scientific results.

(c) As to the bearing of the new definition of economics upon the history of economic thought, I think that by completely erasing any link between economics and "hedonism," and by making the "economic phenomenon" a "rational" one, this definition will enable us to see more distinctly into the various phases of economic life previous to the birth of economic science, will unify the study of the past, present and future of economic life, and will help to clarify the common principles underlying them.[7]

(d) Finally, I would like to recall once more the tremendous importance of a widespread knowledge of the real meaning of economic science, and of a correct way of applying it to practical life. It is my opinion that if everybody understood the meaning of these words of Croce, the Italian liberal, written in 1900, the world would be a different, and probably a better, place:

> I think that pure economics must get rid of its illegitimate union with "economic liberalism"; because economic liberalism is a very good moral-social-political creed, but is not a scientific one. Therefore one must let the "purists" in economics be whatever they want to be in any other field, without accusing them of being in contradiction with pure economics. In fact, the common acceptance of very general laws lends itself to different and even opposite practical and concrete programs.

<div align="right">Giorgio Tagliacozzo.</div>

New York City

7. The leading thread for a unified view of the various phases of economic life will be the concept of *"advantage,"* that will supersede those of *"goods'* and *"services,"* which have characterized two phases of the development of economic science, but which are becoming more and more old-fashioned. The concept of "advantage" is close to Professor F. A. Fetter's conception of *"psychic incomes"* (Principles of Economics, New York, 1913, Chap. VI). However, I do not think that he tried to apply this concept to a unified view of the history of economic thought.

MONOPOLISTIC DISCRIMINATION
IN THE CRANBERRY INDUSTRY[1]

SUMMARY

I. Need for economic criteria in evaluating monopolistic practices,
330. — II. Development of cranberry growing, 332. — III. Development
of processing, 336. — IV. Indictment of marketing organizations, 339.
V. Demand for fresh cranberries, 340. — VI. Demand for cranberry sauce,
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competitive allocation of the supply, 358. — IX. The quality factor, 365. —
X. Reconsideration of the antitrust indictment, 366.

I

The general principles of the theory of price discrimination
are by now well understood,[2] and several writers have applied
these principles to the analysis of specific problems in the field of
agricultural marketing.[3] In some instances statistical demand
curves have been used for this purpose, but so far as the writers
are aware, no comprehensive statistical test has as yet been
applied to the actual operations of a marketing monopoly.

Yet there is obvious need for such analyses. Within the
past fifteen years, market control schemes, such as price discrimina-
tion in the form of milk price plans, price stabilization programs,
the Food Stamp Plan, and even acreage restriction schemes, met
with responses ranging from toleration to public approval and
active governmental promotion. At the same time, several large
coöperative organizations concerned with the marketing of
agricultural products were prosecuted under the antitrust law

1. The authors are indebted to Professor John D. Black and Dr. Caleb A.
Smith, of Harvard University, for valuable comments and suggestions.
2. See the writings of Edgeworth and Pigou, and Joan Robinson, The
Economics of Imperfect Competition, 1933, Chap. XV.
3. See John D. Black, Agricultural Reform in the United States, 1929;
M. Ezekiel, "A Statistical Examination of the Problem of Handling Annual
Surpluses of Non-Perishable Farm Products," Journal of Farm Economics,
April, 1929; John Cassels, A Study of Fluid Milk Prices, Harvard University
Press, 1937 (an analysis of the special case of price discrimination between a
monopolistic and a competitive market); F. V. Waugh, E. L. Burtis, and A. F.
Wolf, "The Controlled Distribution of a Crop Among Independent Markets,"
this JOURNAL, November, 1936; G. S. Shepherd, "Price Discrimination for
Agricultural Products," Journal of Farm Economics, 1938; Norman L. Gold,
A. C. Hoffman, and Frederick V. Waugh, Economic Analysis of the Food
Stamp Plan, United States Department of Agriculture, 1940.

for practicing privately, so it seemed, what had been approved when practiced under some form of public supervision. In fact, in some cases it appeared that marketing agreements sponsored by public bodies were more inimical to the public or consumer interest[4] than private agreements which were the subject of anti-trust proceedings.

This wide range of treatment of similar practices raises important problems of public policy. It suggests that purely legal criteria are no longer adequate in evaluating these practices, and indicates a need for analyzing and measuring their economic effects in terms of the public welfare. The case for economic tests of monopoly, in the sense of effective control of the market resulting in price increases and quality deterioration, was stated by E. S. Mason in the following terms:

> The opinions of the court in these (Sherman Act) cases constantly refer to monopoly in the sense of control of the market, but little examination of evidence pertinent to the question of market control is ever undertaken. . . . American courts have in this class of cases been willing to accept the contract itself as evidence of restriction and, consequently, of an attempt to monopolize without inquiring further into the question of how great a control of the market is secured to the contracting parties.[5] . . . Although "undue" or "unreasonable" control of the market is constantly inserted in judicial decisions as to the meaning of monopoly, the data capable of indicating this control are almost universally ignored by the courts.[6]

Professor Mason calls for tests of the degree of market control, tests which "must necessarily be related to the behavior of prices, outputs, and other variables . . ." "by means of which market situations and business practices considered to be favorable to the public interest can be separated from those that are not."[7] It is

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4. The public interest is here identified with the interest of the "consumer," interpreted in the orthodox sense, on the basis of the given distribution of income. Interpretation of the consumer interest in terms of welfare analysis provides justification for certain types of price discrimination, such as the Food Stamp Plan. The concept may be broadened further by considering economic and social stability, national security, development and conservation of resources, protection of particular producer groups, and other social objectives. See K. W. Kapp, "Economic Regulation and Economic Planning," *American Economic Review*, December, 1939, and a forthcoming book, *Social Costs and Social Returns*, by the same author.

5. See E. S. Mason, "Monopoly in Law and Economics," *Readings in the Social Control of Industry*, Philadelphia, 1942, pp. 25–47, reprinted from the *Yale Law Journal*, 1937.

6. Ibid., p. 40.

7. Ibid., pp. 41, 43.

the purpose of this study to apply such a test to the operations, over the past decade, of one of the agricultural coöperatives which have been the subject of an antitrust indictment.

II

The first attempts at commercial cultivation of cranberries were made in the Cape Cod region of Massachusetts around the beginning of the nineteenth century. By 1900, about 24,300 acres were under cultivation, nearly all of it in the States of Massachusetts, New Jersey and Wisconsin. Between 1900 and 1942, the aggregate acreage in the United States has been expanded only slightly, reaching 28,240 acres in 1942.[8] However, higher yields resulting from more efficient methods of cultivation have brought about a notable increase in total production, from an annual average of about 365,000 barrels in the five-year period 1900–04 to more than 650,000 in the period 1938-42. Farm income from the sale of cranberries increased from about $2,000,000 per annum around the turn of the century to more than $7,500,000 in 1938–42. In 1942, it reached the highest peak in the history of the industry, with a total value of $10,400,000.

The commercial production of cranberries is highly concentrated, with 95 per cent of the crop grown in a few specialized areas in Massachusetts, New Jersey and Wisconsin, where soil and climate are particularly suitable. The principal producing centers are Plymouth and Barnstable Counties in Massachusetts, which account for two-thirds of the total output, the Pine Barren region of New Jersey, and central and northern Wisconsin. In recent years, the industry has reached some importance near the mouth of the Columbia River in Oregon and in the Grayland section of Pacific and Gray's Harbor Counties in Washington. A small acreage located at the eastern end of Long Island and a few scattered bogs in Maine, New Hampshire, Rhode Island, Connecticut, Michigan and Minnesota are not of great commercial importance. There is little cranberry production outside the United States. Approximately 100 acres are under cultivation in Nova Scotia. Attempts at growing cranberries in Scandinavia, Denmark and the Netherlands have met with slight success.

The high degree of geographical concentration of the industry

8. Bearing and non-bearing acreage. Source: U. S. Bureau of Agricultural Economics.

is explained by the fact that the peculiar requirements of the crop are met in only a limited number of locations.[9] Outside these most favored areas, expansion of acreage runs up against steeply increasing costs. Furthermore, even where high net returns seemed to warrant such expansion, high initial investment costs tended to discourage and delay the opening-up of new bogs in locations in which soil and climate do not offer assurance of permanent profitability.

By 1900 it was apparent that, with the possible exception of the Pacific Coast, suitable locations for the growing of cranberries were nearly exhausted. In spite of a rapidly expanding market, the rate of increase of acreage had declined to about one per cent per annum around the beginning of the century, and it has been practically zero since about 1914. The increasing demand was met, however, by more intensive cultivation of the existing bogs. The average level of yields was raised from about 15 barrels per acre around 1900 to almost 25 barrels at the present time[1] (Figure I).

The factors which made for geographic concentration and restricted entry were also responsible for the concentration of bog holdings in fewer hands. The remarkable increase in yield during the past half-century was made possible only by more costly methods of production, involving higher outlays for bog construction and maintenance and more expensive equipment for the protection of the crop from frost, insects and weeds.[2] This increase in fixed costs, coupled with an appreciable risk factor which is characteristic of all specialty crops, has given a decided advantage to large-scale producers. In all, there are at present probably not more than about 1700 commercial growers in the United States.

It is clear that the above conditions provide a favorable

9. For an elaboration of these requirements, cf. G. M. Darrow, H. J. Franklin and O. G. Malde, Establishing Cranberry Fields, United States Department of Agriculture, Farmers' Bulletin 1400, reprinted, Washington, D. C., November, 1941; and H. J. Franklin, Cranberry Growing in Massachusetts, Massachusetts Agricultural Experiment Station, Bulletin 371, Amherst, Mass., June, 1940.

1. Average yields on total acreage (bearing and non-bearing), as estimated by the U. S. Bureau of Agricultural Economics.

2. Originally, a large proportion of the bogs were dry bogs which were flooded only once or twice a year. Today, most bogs are equipped for summer flooding. Such flooding is necessary as a disease and pest control measure.
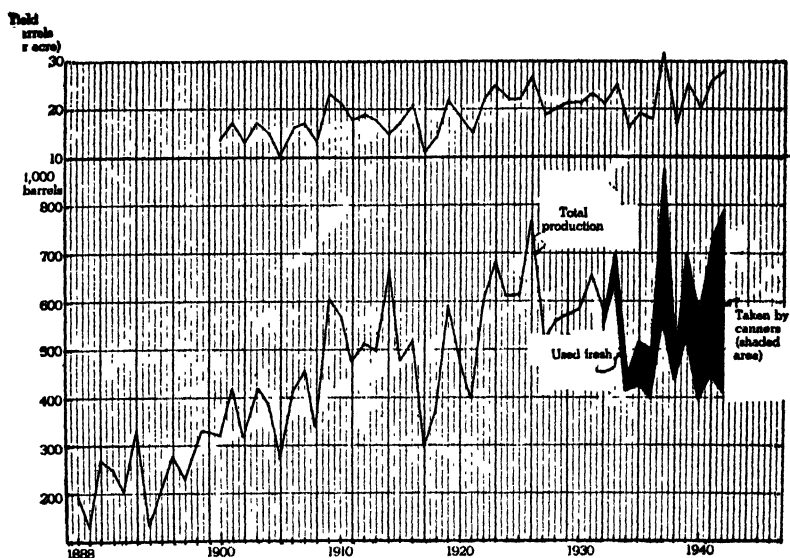
FIGURE I
YIELD PER ACRE AND TOTAL PRODUCTION OF CRANBERRIES
IN THE UNITED STATES

setting for marketing control and other monopolistic practices.[3] On the other hand, it must in fairness be admitted that highly variable yields, the perishability of the product, and the lack of complementary sources of income combined to make cranberry production one of the most hazardous agricultural enterprises. It is therefore not surprising that producers at an early stage awoke to the possibility of protecting their relatively high investments by means of "organized marketing." The first coöperative marketing organization, the Growers' Cranberry Company, was organized in New Jersey in 1895. In 1906, over 90 per cent of the cranberry growers in Wisconsin joined in the Wisconsin Cranberry Sales Company, which was built on broader coöperative lines and featured a pooling system. In the following year, the New

3. Compare the following candid statement by the president of Cranberry Canners, Inc.: "We are fortunate in that the area in which cranberries can be grown is limited. This places a natural restriction on over-production. It also confines growers to small areas where they can become acquainted with one another. The cranberry industry is probably outstanding for its friendly feeling and lack of competition among growers. This has played a great part in furthering coöperation." Cranberry Canners, Inc., Report for the Fiscal Year Ending May 31, 1943, p. 27.

England Cranberry Sales Company was formed by about 35 per cent of the Massachusetts growers, and a similar company was organized in New Jersey. Both were modeled after the Wisconsin organization. The three Cranberry Sales Companies united in 1907 to form the National Fruit Exchange. After several years of price-cutting competition with the Growers' Cranberry Company, a consolidation[4] with the latter was finally effected in 1911, under the name of American Cranberry Exchange.[5] In 1919, to conform with the Clayton Act,[6] the organization was put on a non-stock, non-profit coöperative basis.

The Sales Companies, like the Exchange, are subject to all privileges granted to coöperatives under the Capper-Volstead Act of 1922.[7] Membership certificates in the three State organizations are held by a total of 468 individual and corporate growers. Each State company acts as an intermediary between the grower and the Exchange.

Since it began operations, the Exchange has never handled less than 50 per cent of the total of fresh cranberries marketed in the United States. After fluctuating within a relatively narrow range during the first two decades of its activity, this proportion gradually increased in the third decade, from 59 per cent in 1931 to 72 per cent in 1942. During this period, the Exchange spent

4. In this consolidation, the New Jersey Cranberry Sales Company was absorbed by the Growers' Cranberry Company.

5. Hereafter referred to as the Exchange.

6. Section 6 of the Clayton Act of 1914 exempts from the Sherman Antitrust Act all agricultural coöperative organizations of the non-stock type.

7. The Capper-Volstead Act of 1922 grants the right of collective bargaining to members of agricultural coöperatives which meet the following requirements: (1) that no member of the association is allowed more than one vote because of the amount of stock or membership capital he may own therein, or that the association does not pay dividends on stock or membership capital in excess of eight per cent per annum, and (2) that the association shall not deal in the products of non-members to an amount greater in value than such as are handled by it for members. Coöperatives satisfying these requirements are, moreover, exempted from both State and Federal income taxes.

Section 2 of the Capper-Volstead Act authorizes the Secretary of Agriculture, after complaint, notice and hearing, to issue a "cease and desist" order when he finds that "the price of any agricultural product is unduly enhanced" by reason of such association restraining trade. It was thus recognized that an agricultural coöperative association might abuse its powers in order to engage in activities inimical to the public interest. See E. G. Nourse, The Legal Status of Agricultural Coöperation, New York, 1927, and L. S. Hulbert, Legal Phases of Coöperative Associations, Farm Credit Administration, Bulletin No. 50, May, 1942.

an average of 44 cents a barrel for advertising amounting to four per cent of the f.o.b. shipping point value of the product. Advertising outlays represent nearly 50 per cent of the total expenses of the organization.

From its inception, the American Cranberry Exchange has given considerable attention to the changing conditions of the market. Each year, as soon as reliable crop estimates are available, an "opening price" is set with a view to maximizing returns to the growers. The factors involved in the determination of the opening price will be considered later.

III

After World War I, a new factor came to the aid of cranberry growers. The rapid development of the canning industry opened a year-around market for crop surpluses. In 1931, seven per cent of the crop was processed. By 1941, this percentage had increased to thirty-five.[8]

The benefits which growers derived from canning are manifold. Before the advent of canning, the crop was picked before reaching full maturity, and had to be marketed within three months of the harvest. A large proportion of the crop was usually lost through spoilage. For processing, however, cranberries may be left on the vines for full ripening, with a resulting increase in weight and sugar content. Canned berries may be marketed throughout the year (as sauce, juice or cocktail[9]), and the frozen fruit may be carried over to be canned in the following crop year. Because the canned product can be made available to consumers at times and places at which fresh berries could not be bought, and because of its greater convenience, this innovation brought about not merely a stabilization, but a considerable expansion of the market.

About 1918, Marcus L. Urann of South Hanson, Massachusetts, a grower, began canning Massachusetts cranberries under the "Ocean Spray Brand" trade mark. Other companies entered the field, growers as well as commercial canners. It was soon felt among some leading growers that the need for full integration of the processed berries in a stabilization policy could be met only by a comprehensive growers' coöperative. In 1930 the

8. In 1942, the percentage diverted to processing rose to 50, but half of this was dehydrated on Government order.

9. 1942 was the first year in which a significant proportion of the crop was dehydrated.

three leading processors, all producers of berries, decided to pool their facilities, and the new company was created as Cranberry Canners, Incorporated, with M. L. Urann as its first president. Cranberry Canners in turn entered into contracts with the New England Cranberry Sales Company, the Growers' Cranberry Company (New Jersey), and the Wisconsin Cranberry Sales Company, providing that each deliver a minimum of 10 per cent of the cranberries grown by its members to Cranberry Canners. In practice, appreciably more than 10 per cent of the berries are delivered each year for processing. In addition, a substantial quantity of cranberries is delivered to Cranberry Canners from members who are not affiliated with the Exchange.

Cranberry Canners, like the growers' State coöperatives, handle only cranberries which have been delivered to the company by its own members. But, as is quite evident, members have purchased (through agreements or otherwise) quantities of cranberries from non-members. Analogous to the Exchange, cranberries delivered to Cranberry Canners are pooled, and payments are made from the sales proceeds pro rata of the deliveries, practically without regard to quality.

About one-third of the voting stock of Cranberry Canners, Inc. is now owned by a member company, the United Cape Cod Cranberry Company. The majority of the voting stock of the United Cape Cod Cranberry Company is owned or controlled by M. L. Urann. Approximately 13 per cent of the voting stock of Cranberry Canners is held by another member company, the A. D. Makepeace Company.[1] The three State coöperatives of growers and individual stockholders own the rest of the stock. From the time of incorporation, Cranberry Canners has been eligible for the privileges given under the Capper-Volstead Act, and of the Farm Credit Act of 1933.

Since its inception, Cranberry Canners has processed and distributed a large proportion of the processed cranberries in the

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1. These two companies, owners of large bog holdings in Massachusetts, turned over to Cranberry Canners in 1942 over 22 per cent of the total production in the State — or more than half of the quantity processed in the United States in that year — some of which was purchased from smaller bog operators. Each of these two large companies is a member of both the Exchange and Cranberry Canners. This may serve to illustrate the extent of economic control which a few large growers can exercise within the selling organizations as well as in the industry as a whole.

United States. It is estimated that its control of total marketings rose from 60 per cent in 1931 to about 85 per cent in 1942.

The two dominant cranberry marketing organizations — the Exchange and Cranberry Canners — are closely tied together

TABLE I

NATURE OF INTERLOCKING DIRECTORATES BETWEEN THE SALES COMPANIES, AMERICAN CRANBERRY EXCHANGE, AND CRANBERRY CANNERS, INC., 1942

Directors	New England Cranberry Sales Company	Wisconsin Cranberry Sales Company	Growers Cranberry Company Inc.	American Cranberry Exchange	Cranberry Canners, Inc.
A. D. Benson......	XX			X	X
R. S. Handy.......					X
J. C. Makepeace...	X			XX	XX
R. Makepeace....	X				X
C. B. Urann......	X				X
M. L. Urann......	X			X	XX
E. F. Bills........					X
F. S. Chambers...			XX	X	X
I. Harrison........			XX	XX	X
C. L. Lewis.......		X			X
A. Hedler........		XX		XX	X
G. N. Potter......		X		X	X
R. S. Gibbs.......	XX			XX	
C. M. Chaney.....				XX	
L. B. R. Barker...	X			X	
G. A. Cowen......	X			X	
T. H. Budd.......			XX	X	
E. Crabbe........			XX	X	
G. Nash..........		X		X	
H. G. Mann.......					X
O. G. Colley.......					X
E. D. Atwood.....	XX			X	

Note: X indicates a director of the respective company.
        XX indicates a director and officer of the respective company.

    Source: Annual Reports of the Sales Companies, the American Cranberry Exchange, and Cranberry Canners, Inc.

in a system of interlocking directorates, by virtue of which, in effect, they form a marketing monopoly controlling more than 75 per cent of the total crop. Evidence of the closeness of the connection between Cranberry Canners, on the one hand, and the Exchange and the Sales Companies, on the other, is presented in Table I.

IV

In October, 1941, the Antitrust Division of the Department of Justice instituted criminal proceedings against Cranberry Canners, Inc., the American Cranberry Exchange, the three State coöperatives, the United Cape Cod Cranberry Company, the A. D. Makepeace Company, and thirteen individuals,[2] charging them with having entered into and engaged "in an unlawful combination and conspiracy" in violation of Sections 1 and 2 of the Sherman Antitrust Act of 1890. As "a part of said unlawful combination and conspiracy," the charge further specifies, the defendants "determine the quantity of cranberries to be marketed as fresh berries, and the quantity of cranberries to be manufactured and sold as cranberry products," "agree upon . . . the prices to be charged for cranberries and cranberry products," "restrict, limit and control the quantity of cranberries to be marketed and sold as fresh berries," "control and regulate the manufacture and sale of cranberry products," and "suppress and prevent competition between cranberry products and cranberries." These contentions are substantiated by enumeration of a series of overt acts, many of which were a matter of common knowledge. It is alleged, furthermore, that the defendants "compelled, persuaded, and influenced growers, not members of the defendant American Cranberry Exchange, Inc., or stockholders of the defendant Cranberry Canners, Inc., to sell cranberries at the prices fixed and determined as aforesaid," purchased large quantities of cranberries from growers, not members of the defendant American Cranberry Exchange, Inc., or stockholders of the defendant Cranberry Canners, Inc., for the purpose of preventing . . . the sale of said cranberries in competition with cranberries marketed . . . by the defendant American Cranberry Exchange, Inc.," "refused to sell cranberries to independent canners and influenced and persuaded growers, not members of the defendant American Cranberry Exchange, Inc., or stockholders of the defendant Cranberry Canners, Inc., to refuse to sell cranberries to independent canners," and "purchased large quantities of cranberries from growers, not members of the defendant American Cranberry Exchange, Inc. or stockholders of the defendant

2. United States versus Cranberry Canners, Incorporated, et al.: Indictment No. 110–389 (criminal), October, 1941.

Cranberry Canners, Inc., for the purpose of preventing . . . the manufacture of cranberry products by independent canners."

On November 2, 1942, a plea of *nolo contendere* was entered by counsel for the corporate defendants. The case therefore did not go to trial, and the full evidence appears only in the secret record of the grand jury proceeding. Fines imposed by the Government amounted to a total of $32,000.[3]

Regardless of the merits of the legal case, one may wonder whether there is any economic evidence in support of the Government's contentions. Is there economic evidence of monopolistic practices? In particular, are the marketing policies practiced by the defendants during the past decade in agreement or in contradiction with the hypothesis of a "combination and conspiracy" between Cranberry Canners and the Exchange, with the purpose of increasing total returns to their members? If so, how much harm was done to the consumer?

To investigate this problem, the authors undertook an analysis of the market conditions prevailing in the industry in the period 1931–42, and determined for each year what particular allocation of the crop to the fresh and canned cranberry markets, respectively, would maximize the net revenue of a marketing monopoly controlling the entire crop. The actual allocation of the crop to the two markets was then compared with the "optimum" (monopolistic) allocation and with the allocation that would obtain under free competition.

V

Among the factors determining the price of fresh cranberries, two may be expected to be most important. One is the per capita quantity of fresh cranberries offered in the market. The other is per capita income or purchasing power. Price will vary inversely with the supply and directly with income; and as a first approximation, these relationships may be assumed to be linear.

To test this hypothesis, a regression plane of the form $X_1 = a + bX_2 + cX_3$ (where a, b and c are parameters to be estimated) was fitted to annual data of the following three variables (Table II):

X_1: Weighted average price of fresh cranberries (dollars per barrel[4]), f.o.b. shipping point, received by the American Cranberry

3. Two defendants had been previously dismissed on account of death, whereas *nolle pros* were granted to seven defendants.
4. One barrel = 100 pounds.

TABLE II

Year	Price of Fresh Cranberries (Dollars per Barrel)[1] X_1	Pounds of Berries Sold per 1000 Persons X_2	Realized National Income (Per Capita) X_3
1931.	6.62	503	485
1932.	7.82	462	374
1933	6.51	508	356
1934.	11.57	328	407
1935.	12.34	334	444
1936.	13.81	311	510
1937.	9.14	438	536
1938	11.40	336	484
1939.	10.15	401	523
1940.	13.05	298	567
1941.	12.49	336	674
Average 1931–41	10.45	387	487
1942.	13.48	307	854

[1] One barrel = 100 pounds
Sources: See p. 340.

Exchange.[5] This price is representative of the average price of cranberries received by all sellers.[6]

X_2: Quantity of cranberries marketed fresh (pounds per 1000 persons). This quantity was obtained by subtracting from the total cranberry crop for each year, as reported by the United States Bureau of Agricultural Economics, the quantity of berries diverted to canning,[7] and dividing by the total population.

X_3: Realized national income (dollars per person) as estimated by the National Industrial Conference Board. These estimates represent the sum of payments made by business enterprises and Government agencies to individuals for goods and services.

The period covered by the analysis, 1931–41, was believed to be reasonably homogenous for the purpose of this study. The analysis did not produce any evidence to the contrary. Secular factors appear to be absent in the price-quantity and price-income relationships.

The resulting regression equation,

$$X_1 = 21.03 - 0.03083\ X_2 + 0.00275\ X_3 \qquad (I)$$

5. American Cranberry Exchange, Annual Reports.
6. All varieties and grades. See Section IX for a discussion of the error introduced thereby.
7. For a description of this series, see p. 346, n. 3.

may be interpreted as follows. For every additional pound of fresh cranberries per 1000 persons marketed in any given year, the price per barrel declines, on the average, by 3.083 cents. Every additional dollar of income per person, on the other hand, results in an increase in the price of fresh cranberries of 0.275 cents per barrel.

The regression coefficients, and the multiple correlation coefficient $(R = 0.98)$ are highly significant by the usual tests. The two net regression lines are shown in the scatter diagrams
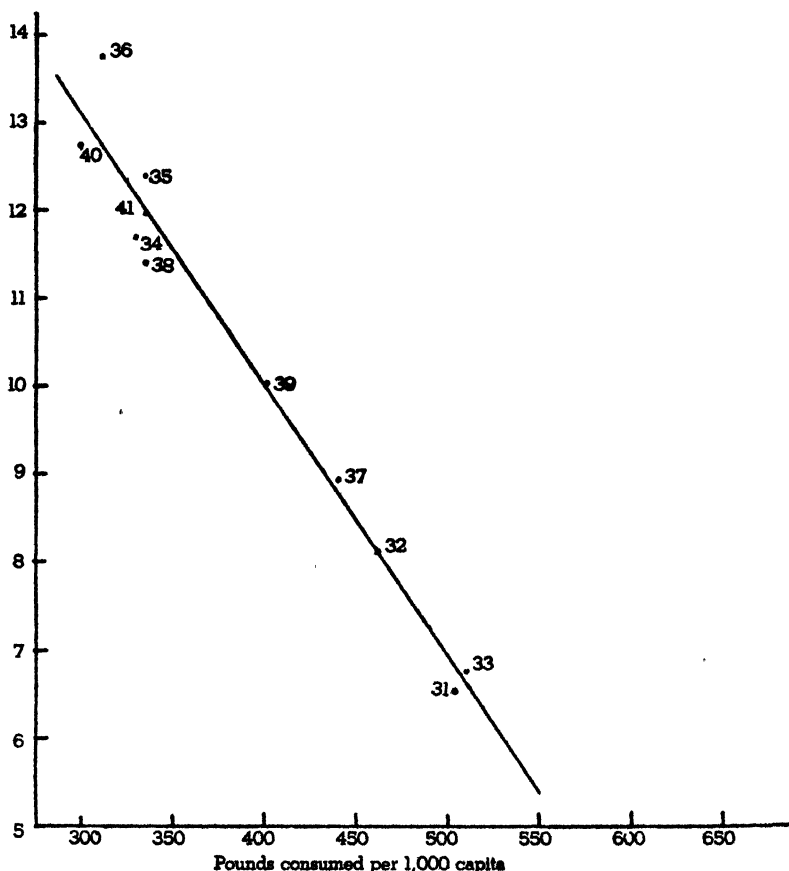
FIGURE II

RELATION BETWEEN PRICE OF FRESH CRANBERRIES AND
QUANTITY MARKETED IN THE UNITED STATES, 1931–41,
AFTER REMOVING THE EFFECT OF INCOME

Price
(dollars per barrel)

National income (dollars per capita)

FIGURE III

(Figures II and III).[8] There is no evidence of curvilinearity in these relationships.

8. If each variable is expressed in terms of its standard deviation, we obtain

$$\frac{X_1}{\sigma x_1} = a' - \beta_1 \frac{X_2}{\sigma x_2} + \beta_2 \frac{X_3}{\sigma x_3}$$

where the Beta coefficients may serve as indexes of the relative importance of the two determining variables. (See M. Ezekiel, Methods of Correlation Analysis, 1941, pp. 217–218). In the above case,

We now proceed to test a supplementary hypothesis. Do fluctuations in the sales of processed cranberries affect the price of fresh cranberries? It is obvious that there is one way in which the quantity of *berries diverted to canning* does affect the price of fresh cranberries; namely, by reducing the quantity of fresh cranberries which must be sold.[*] This effect is already taken into account in Equation I. But on the other hand, these canned cranberries will sooner or later appear on the market, where they might compete with the fresh berries, thus affecting unfavorably the demand for the latter.

Until about 1934, the sales of processed berries were negligible, so that no significant effect on the price of fresh berries could be anticipated. Since 1935, however, larger and larger quantities of canned cranberries were marketed in each year (Figure I). In these years, this quantity tended to be somewhat correlated with the quantity of cranberries marketed fresh; but on the whole, there is sufficient independent year-to-year variation in the two variables to permit a test of the above hypothesis by introducing the sales of processed cranberries as a third determining variable into the analysis.

The correlation test shows that, for the range of observations covered by the analysis, the quantity of canned cranberries marketed does not affect the price of fresh berries, after the effect of canning on the supply of fresh berries has been taken into account; nor do the sales of fresh cranberries affect the price of the canned product. In other words, the demand for fresh cran-

$$\beta_1 = -0.94; \qquad \beta_2 = +0.10.$$

If each variable is divided by its mean, we obtain

$$\frac{X_1}{\overline{X}_1} = a'' - f_q \frac{X_2}{\overline{X}_2} + f_i \frac{X_3}{\overline{X}_3}$$

where f_q represents the flexibility of price, at the mean, with respect to quantity marketed, and f_i the price flexibility at the mean with respect to income. (See H. L. Moore, *Synthetic Economics*, p. 55.) In the above case, $f_q = -1.14; f_i = +0.13.$

9. The effect of canning on the prices of fresh berries through a reduction in the supply of the latter is given by the regression coefficient b in Equation I. Strictly speaking, however, this is true only for small variations in the amount processed. As a rule, only the berries of higher quality are sold on the fresh market, while those of poorer grade are diverted to canners. If the entire crop were sold fresh, one might therefore expect that the lower-grade berries not ordinarily sold in the fresh market would tend to depress prices by more than the amount indicated by the regression coefficient (see Section IX).

berries and the demand for canned cranberries are mutually independent.

VI

In a similar analysis of the factors determining the price of processed cranberries, a fundamental difficulty is introduced by the lack of homogeneity or stability in the relationships studied. Cranberry canning is a young and growing industry, which has found a rapidly expanding market for its products.[1] Stable price-quantity and price-income relationships cannot be expected until the industry has fully matured and a long-term equilibrium has been reached.
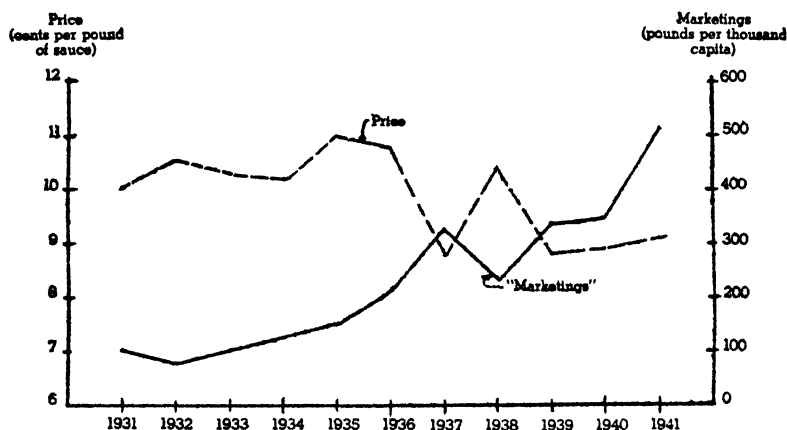
FIGURE IV

SALES OF CRANBERRY SAUCE AND PRICE OF CRANBERRY SAUCE
IN THE UNITED STATES, 1931–41

Since 1931, the sales of processed cranberries have increased, on the average, at the rate of approximately 20 per cent each year, a relationship which is expressed graphically by a trend of the form of a compound-interest curve (see Figure IV). This marked and accelerated increase in per capita consumption of canned cranberries was, however, not accompanied by a substantial long-term decline in price, nor can it be explained by a significant secular increase in income per capita.

1. "Markets for processed cranberries have been developed faster than the supply." (Mr. Marcus L. Urann, President of Cranberry Canners, Inc., in a letter to Charles D. Hyson dated April 14, 1943.)

But whatever the a priori plausibility of such hypotheses regarding the causes of secular variation or lack of secular variation in the prices and sales of canned cranberries, their significance cannot be established by means of statistical analysis. Hypotheses concerning the year-to-year fluctuations, however, can be subjected to statistical test. We therefore proceed to investigate whether a stable relationship, similar to that used in the analysis of fresh cranberries, could be found between the *relative year-to-year changes* in price, on the one hand, and the *relative year-to-year changes* in marketings and income, on the other hand. Annual link-relatives were computed, for the period 1931-32 to 1940-41, for the following three variables:

X_1: Weighted average price (cents per pound) of cranberry sauce received by Cranberry Canners, Inc.[2] Since Cranberry Canners control a large proportion of the total marketings of processed berries, nearly all of which are sold in the form of cranberry sauce, it may safely be assumed that these prices are representative of the prices of processed cranberries received by all sellers.

X_2: Total quantity of cranberry sauce marketed (pounds per 1000 persons).[3]

2. Cranberry Canners, Inc., Annual Reports.

3. Data pertaining to actual sales were available only for Cranberry Canners, Inc. (see Table III, Col. 4. Source: Annual Report). The share of Cranberry Canners, Inc., in the total quantity of sauce marketed was estimated on the basis of the proportion of sauce manufactured by Cranberry Canners to the total sauce pack in each year, as computed from data collected by the National Canners Association. (Conversion factors used to convert the contents of containers of different sizes into pounds were obtained from Cranberry Canners, Inc.) These percentages, shown in Table III, Col. 5, are indicative of the growing control of the industry by Cranberry Canners, Inc., the trend being S-shaped. There is, however, some year-to-year fluctuation around this trend, which, it was thought, is in all probability largely due to errors in the data. This hypothesis received support from the fact that after smoothing the data by means of a freehand curve of the logistic type, the price-quantity correlation is substantially higher than that obtained on the basis of the unsmoothed data. (If the year-to-year fluctuations around the trend were real, smoothing would reduce the correlation.) The smoothed percentages are shown in Table III, Col. 6. The estimated total quantity of cranberry sauce marketed in each year is obtained by multiplying the marketings of Cranberry Canners, Inc., by the reciprocal of the estimated percentage share of Cranberry Canners, Inc., in the total sales of sauce for that year. (See Table III, Col. 7.) The proportion of processed cranberries other than sauce (cocktails, juice, etc.) was negligible, except in 1942, when 50 per cent of the total pack was dehydrated for Army consumption. ˙
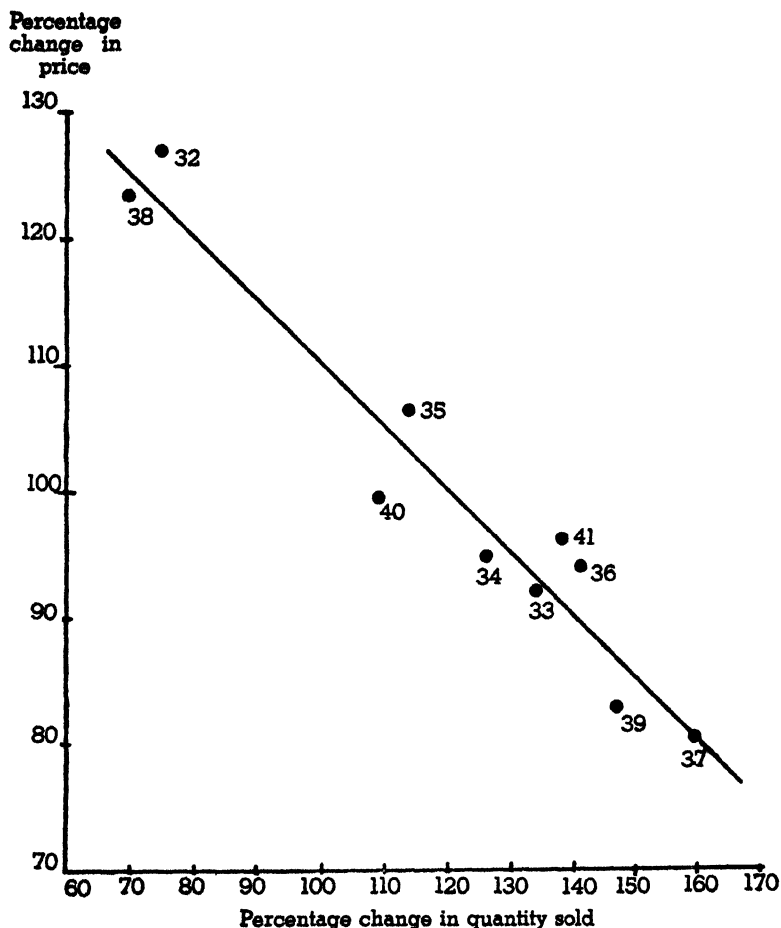
FIGURE V

RELATION BETWEEN PERCENTAGE CHANGE IN PRICE OF CRANBERRY SAUCE
AND PERCENTAGE CHANGE IN SALES OF CRANBERRY SAUCE
IN THE UNITED STATES, 1932–41, AFTER REMOVING
THE EFFECT OF CHANGES IN INCOME

X_3: Realized national income (dollars per head), as estimated by the National Industrial Conference Board.[4]

The link relatives, designated by the symbols Y_1, Y_2 and Y_3, are shown in Table III, Cols. 3, 8, and 10.

The resulting regression equation,

4. This variable is identical with the X_3 used in the analysis of fresh cranberry prices.
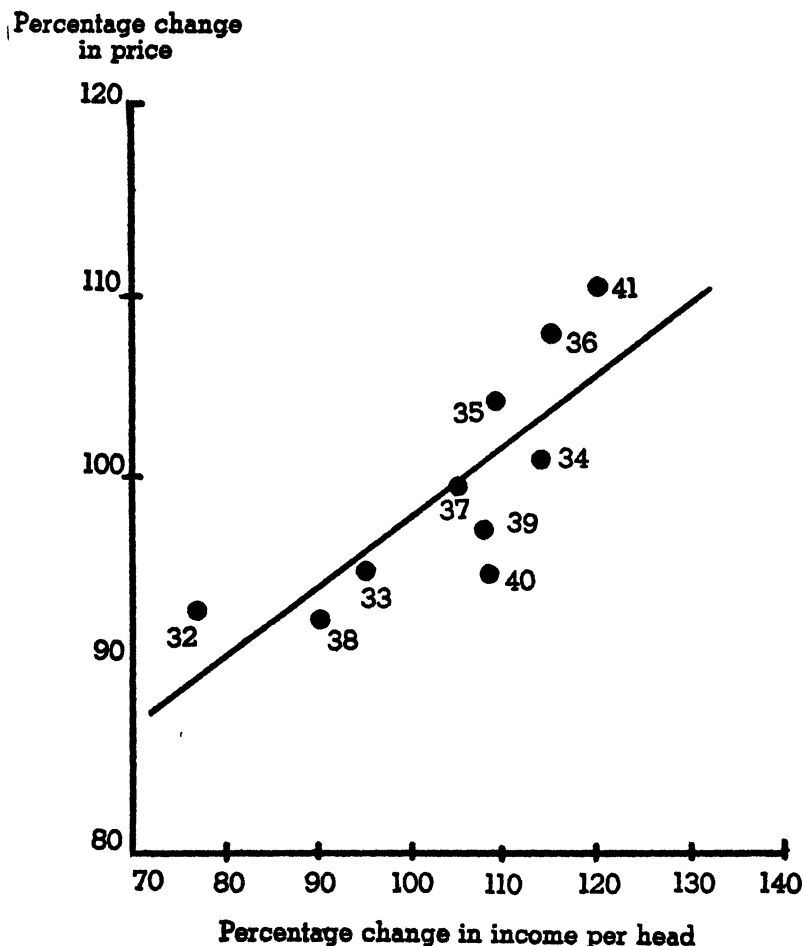
FIGURE VI
RELATION BETWEEN PERCENTAGE CHANGE IN PRICE OF CRANBERRY SAUCE,
AND PERCENTAGE CHANGE IN INCOME PER HEAD IN THE
UNITED STATES, 1932–41, AFTER REMOVING THE EFFECT
OF CHANGES IN SALES OF CRANBERRY SAUCE

$$Y_1 = 120.0 - 0.49429 \ Y_2 + 0.38125 \ Y_3 \qquad \text{(II)}$$

may be interpreted as follows:

Assuming income per head at the preceding year's level, the market can be expected to absorb every year a 17.5 per cent increase in the quantity of cranberry sauce marketed, without a

TABLE III

DATA USED IN THE PRICE ANALYSIS FOR PROCESSED CRANBERRIES, 1931-41

Year	Price per Pound of Cranberry Sauce		Sauce Sold by Cranberry Canners Inc	Percentage Share of Cranberry Canners, Inc in Total		Total Quantity of Cranberry Sauce Marketed		Realized National Income	
	Cents (X_1)	Link-Relatives (Per Cent) (Y_1)	Pounds per 1000 Persons	Quantity of Sauce Manufactured (Actual)	Quantity of Sauce Marketed (Estimated)	Pounds per 1000 Persons (X_2)	Link-Relatives (Per Cent) (Y_2)	Dollars per Head (X_3)	Link-Relatives (Per Cent) (Y_3)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1931	10.0	—	61	60	60	102	—	485	—
1932	11.6	116	47	60	61	77	75	374	77
1933	10.3	89	63	60	61	103	134	356	95
1934	10.2	99	81	64	62	130	126	407	114
1935	11.0	108	93	60	63	148	114	444	109
1936	10.8	98	135	67	65	208	141	510	115
1937	8.8	81	225	71	68	331	159	536	105
1938	10.4	118	170	69	73	233	70	484	90
1939	8.8	85	267	73	78	342	147	523	108
1940	8.9	101	305	82	82	372	109	567	108
1941	9.1	102	433	84	84	515	138	674	119
Average 1931-41	10.0	99.7	171	—	—	233	121.3	487	104
1942	10.2	112	313¹	—	85	369	72	854	127

¹ Total cranberry pack (including dehydrated berries, juice, and cocktail) was equivalent to 680 pounds of sauce per 1000 persons.
Sources: See pp 346 and 347.

decline in price.[5] Every per cent increase in quantity *in excess of 17.5 per cent* over the previous year would *depress* the price by 0.49 per cent below the previous year's level. Conversely, every per cent by which the increase in quantity marketed *falls short of 17.5 per cent* will result in a 0.49 per cent *increase* in price over the previous year.

On the other hand, if we suppose that the quantity of sauce marketed is held constant at the previous year's level, the price would be unchanged, provided the income per head declined 23 per cent, compared with the previous year.[6] For every per cent by which the decline *exceeds 23 per cent*, the price will *fall* 0.38 per cent below the previous year's level. Conversely, for every per cent by which the decline in income *falls short of 23 per cent*, price will *increase* 0.38 per cent above the previous year's level.

The regression coefficients, and the multiple correlation coefficient ($R = 0.96$) are highly significant. The two net regression lines are shown in the scatter diagrams (Figures V and VI).[7]

VII

The demand curves derived in the preceding sections may now be used to estimate the average and total revenue to growers which would result from given marketings of fresh and processed cranberries, respectively, in specified years. For this purpose, the demand curves must first be translated into actual price-quantity relationships, for individual years, with population and national income fixed at the levels observed in these years. These relationships are shown in Figures VII and VIII, for 1932, 1936, 1939, 1940, 1941, and 1942.[8] The heavy dots represent the equilibrium prices

5. This statement is readily verified by substituting $Y_2 = 100$ and $Y_1 = 100$ in Equation II; $Y_2 = 117.5$. If the change in per capita income (Y_3) is held constant at its mean (104), the equilibrium quantity which can be absorbed each year by the market without a change in price is equal to 121 per cent of the previous year's sales.

6. This can be verified by substituting $Y_1 = 100$ and $Y_2 = 100$ in Equation II. If, on the other hand, a normal increase in quantity (equal to 21.3 per cent of the preceding year's sales) has taken place, the equilibrium income which will leave price unchanged would be equal to 105 per cent of the preceding year.

7. The Beta coefficients are $\beta_1 = -1.20$ and $\beta_2 = +0.40$, respectively.

8. The estimates for 1942 are based on an extrapolation of the relationships observed during the period covered by the analysis, with 1942 population and national income given.
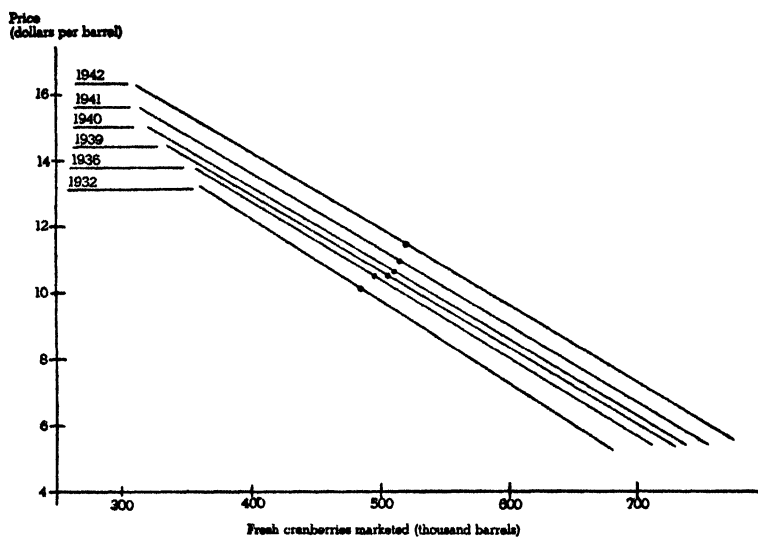
FIGURE VII

RELATION BETWEEN PRICE AND SUPPLY OF FRESH CRANBERRIES
IN THE UNITED STATES, SELECTED YEARS
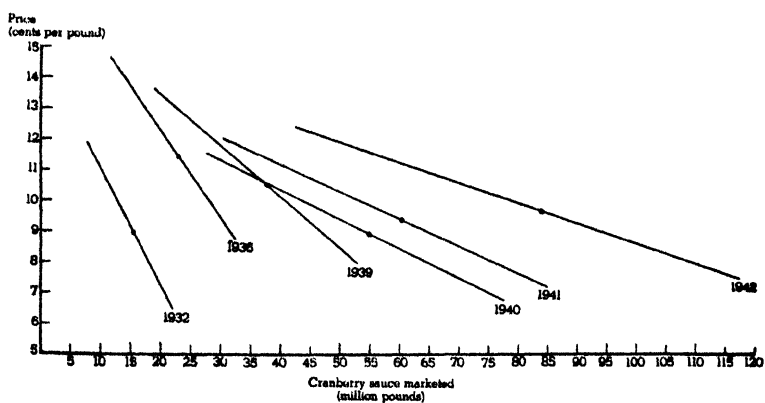
FIGURE VIII

RELATION BETWEEN PRICE AND SUPPLY OF CRANBERRY SAUCE
IN THE UNITED STATES, SELECTED YEARS

for each year at which, given the population and income in these years, a "normal" crop or pack[9] is absorbed by the market.

In spite of the appearance, Figure VII reflects what is believed to be an essentially static situation:[1] the equilibrium price for fresh cranberries is the same for the whole period, except for the effect of national income and population. It so happens that during the period 1932–42 the effect of a slowly increasing population was strongly reinforced by an upswing in national income, the two factors together producing a continuous upward shift in the relationship between the quantity and price of fresh cranberries.[2] This movement, however, may be reversed after the war.

The series of equilibrium prices for processed berries (Figure VIII) not only reflects changes in national income and population, but also the effect of a rapidly expanding demand for the product. They are "moving equilibria," representing prices at which the "normal" annual increase of roughly 20 per cent in the quantity marketed can be absorbed each year. The use of percentages, furthermore, produces a significant systematic shift in the *slope* of the price-quantity relationships, when plotted on arithmetic paper.

The price-quantity relationships shown in Figures VII and VIII are average revenue curves at the level of the marketing organizations. To obtain the average revenue received by the *members* of these marketing organizations resulting from different quantities of fresh and processed cranberries marketed, the average cost of marketing (and the cost of processing, in the case of cranberry sauce) must be deducted.

Analysis of the average marketing costs of fresh cranberries for 1931–40[3] showed a significant regression on the *quantity* marketed by the Exchange[4] (see Figure IX). As might be expected, marketing costs decline as total marketings increase.[5] A similar relationship

9. "Normal" means average in the case of fresh cranberries, trend value in the case of processed cranberries.
1. That is, static in relation to the national economy as a whole.
2. The slight change in slope is due to the use of the deflation method in eliminating the effect of population.
3. Marketing costs include operating costs reported by the American Cranberry Exchange, estimated expenses of the Sales Companies, and cost to growers of containers (quarter barrel boxes). See Table IV.
4. Source: American Cranberry Exchange. The correlation might have been increased by taking additional factors into consideration.
5. The expectation of a curvilinear relationship was not borne out by the few observations available.

TABLE IV

DATA USED IN THE COST ANALYSES

Year	Quantity of Cranberries Marketed by the American Cranberry Exchange (Thousand Barrels)	Average Marketing Costs (Dollars per Barrel)[1]	Quantity of Cranberry Sauce Marketed by Cranberry Canners, Inc. (Million Pounds)	Average Operating Costs (Cents per Pound)[2]
			3	3
1931	317	1.79	5.973	9.12
1932	311	1.69	7.968	7.73
1933	255	1.51	10.269	6.97
1934	233	1.95	11.894	6.31
1935	229	1.88	17.335	6.21
1936	271	2.02	29.012	5.76
1937	294	1.86	22.366	6.71[5]
1938	250	1.90	34.998	5.37
1939	302	1.81	40.309	5.32
1940	267	2.09	57 641	5.34
1941	4	4		

Including operating costs of the American Cranberry Exchange, estimated operating costs of the Sales Companies, and cost to growers of quarter barrel boxes.

[2] Processing and marketing costs, including cost of sugar in cranberry sauce.
[3] Not available
[4] Not used
[5] Adjusted to eliminate storage cost of large carryover from 1937
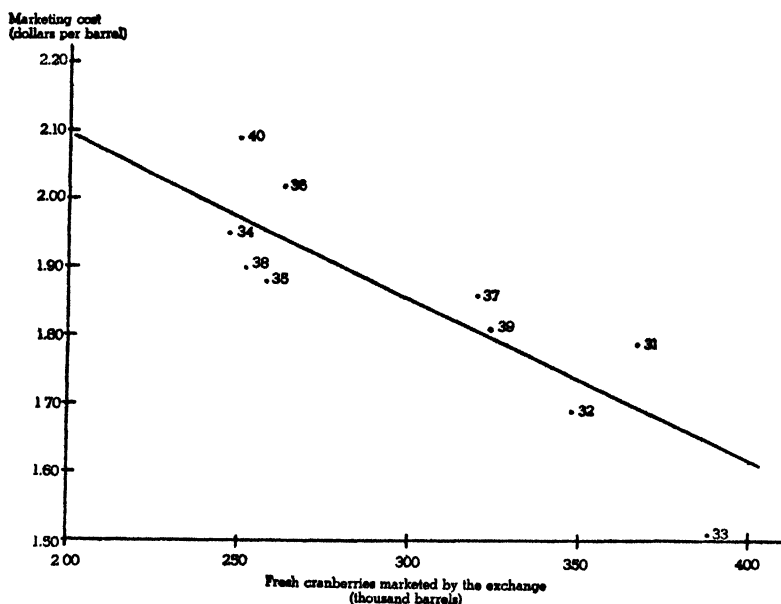
FIGURE IX

RELATION BETWEEN QUANTITY OF CRANBERRIES
MARKETED BY THE AMERICAN CRANBERRY EXCHANGE,
ᴇ AND MARKETING COST PER BARREL, 1931–40

was found to exist between the average operating costs[6] per pound of cranberry sauce reported by Cranberry Canners, Inc.[7] and the quantity of sauce sold by this organization,[8] except that in this case there is clear evidence of curvilinearity: processing and marketing costs decline *at a decreasing rate* as marketings increase (see Figure X).

Assuming that the two principal marketing organizations act in combination, endeavoring to allocate the output which they control in such a manner to the fresh and processed-cranberry

6. Processing and marketing costs, including cost of sugar in cranberry sauce (see Table IV). These data represent costs corresponding to each year's operations. Inasmuch as the year's output of cranberry sauce is not necessarily equal to sales in the same year, they are not strictly applicable to marketings. The error introduced in this way limits the reliability of the data for individual years.

7. Source: Data supplied by Cranberry Canners, Inc.

8. Source: Cranberry Canners, Inc., Annual Report.
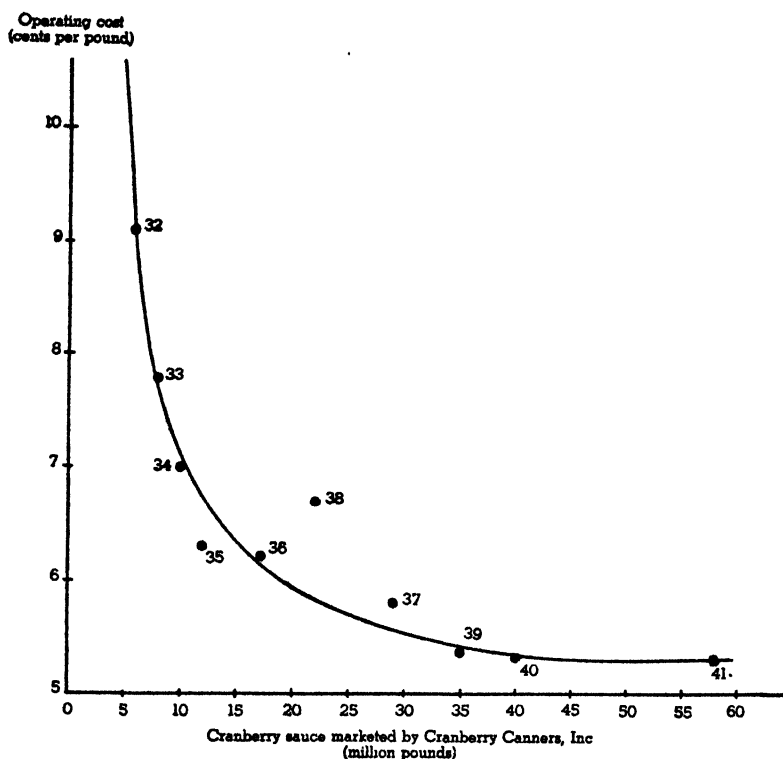
FIGURE X

RELATION BETWEEN QUANTITY OF CRANBERRY SAUCE
MARKETED BY CRANBERRY CANNERS, INC.,
AND OPERATING COST PER POUND, 1932–41

markets as to maximize the gross revenue[9] to their members,
how would they proceed? They would first consider the effect of
variations in the quantity allocated to each of the two markets on
prices in the two markets. We shall assume for the present that
the two marketing organizations are in full control of the market.
More specifically, it will be assumed that the marketing
monopoly, in making its decisions on allocation, could figure on
swinging a fixed proportion of the marketings of unaffiliated
growers. For example, if in 1940 the two organizations marketed
63 per cent of the fresh cranberries, and 82 per cent of the cran-

9, See p. 356, n. 2. Gross revenue = farm value of crop, less cost of
containers.
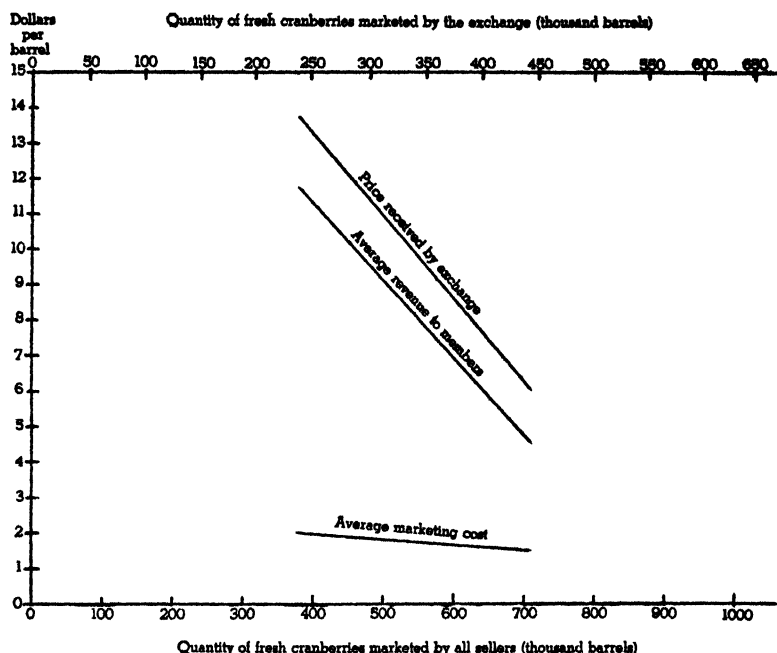
FIGURE XI

RELATIONS BETWEEN PRICE RECEIVED BY THE AMERICAN CRANBERRY
EXCHANGE, AVERAGE MARKETING COST, AND AVERAGE REVENUE TO
MEMBERS PER BARREL, TO QUANTITY OF FRESH CRANBERRIES MARKETED
BY THE EXCHANGE, AND QUANTITY OF FRESH CRANBERRIES MARKETED
BY ALL SELLERS, 1940.

berry sauce, when their allocation ratio was 64:36, it is assumed
that the same proportions would have prevailed if the allocation
ratio had been changed to, say, 60:40.[1]

Secondly, the marketing organizations would consider the
effect of variations in the quantity of berries allocated to each of
the two markets on marketing (and processing) costs.[2] The latter

1. This somewhat artificial assumption is used merely as a link in the
argument and will be dropped later. If monopolistic allocation is attempted
under conditions of imperfect control, the independent growers would sell
in the market in which returns are higher, thus tending to reduce or eliminate
the difference in price and, by the same token, any gains accruing from monopo-
listic discrimination (see Section VIII).

2. Since the total supply in any one year is given, the cost of producing
the berries is not involved here. The allocation of the crop which maximizes
the *gross* revenue to members (farm value) also maximizes their *net* revenue
from that crop.
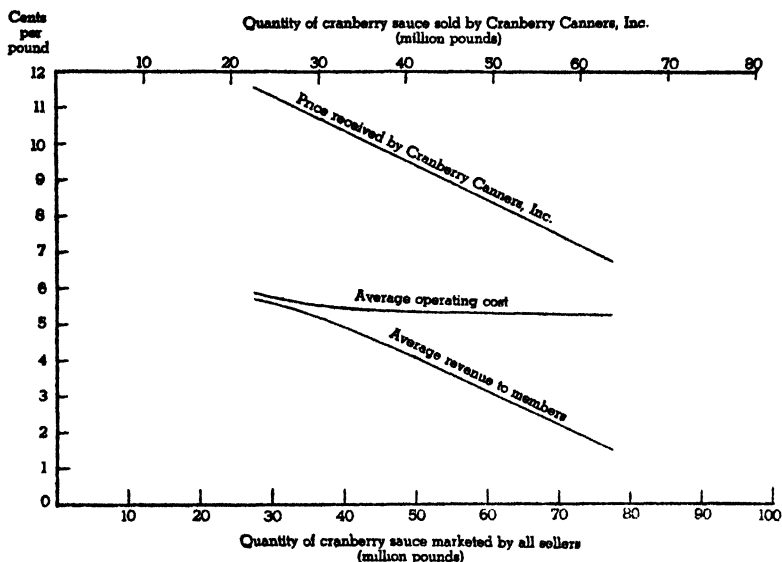
FIGURE XII

RELATIONS BETWEEN PRICE RECEIVED BY CRANBERRY CANNERS, INC.,
AVERAGE OPERATING COST, AND AVERAGE REVENUE TO MEMBERS PER
POUND, TO QUANTITY OF CRANBERRY SAUCE MARKETED BY CRANBERRY
CANNERS, INC., AND QUANTITY OF SAUCE MARKETED BY ALL SELLERS,
1940.

are, of course, a function of the quantities marketed by the or-
ganizations only; they are not affected by the uncontrolled part
of the crop. The average revenue to members is obtained by sub-
tracting from the price received by the marketing organizations
the average operating costs incurred by the organizations in
marketing specified quantities of cranberries in the fresh and
processed form, respectively.[3]

The procedure is illustrated, for the year 1940, in Figures XI
and XII. In each case, the price received by the marketing organi-
zation, the average operating cost, and the average revenue
received by the members of the organization, expressed in dollars

3. The reader may wonder why returns to members of Cranberry
Canners are thus represented by the price of sauce minus the unit operating
cost, inasmuch as direct data on prices paid by Cranberry Canners to their
members are also available (see Cranberry Canners, Inc., Annual Report).
The latter, however, shows all the characteristics of an "administered" price
(inflexibility, rounded figures) and does not reflect the actual condition of the
market in each year.

per barrel or per pound, are read off the vertical scale. The quantity sold by the marketing organization is measured on the upper horizontal scale, and the corresponding total sales of fresh and processed cranberries, respectively (including the "uncontrolled" supply), on the lower horizontal scale. According to our assumption, there is a proportionate relation between the two quantities: the optimum allocation between fresh and processed marketings must be based on the total sales, as given on the lower horizontal scale; the particular quantities contributed by the marketing organizations are found on the upper scale.

VIII

The demand curve for fresh cranberries[4] for 1940, shown in Figure XI, is reproduced in Figure XIII. Marketings of fresh cranberries (all sellers) are read on the lower horizontal scale, from left to right. OQ represents the total supply available for sale in 1940, 564,000 barrels. Part of this supply, however, may be marketed in processed form. The demand curve for berries marketed in the form of cranberry sauce[5] can be readily derived from the demand curve for cranberry sauce shown in Figure XII, by converting quantities of cranberry sauce into their fresh cranberry equivalents.[6] This curve has been plotted in Figure XIII; the quantities (marketings by all sellers) are shown on the upper horizontal scale, which is read from right to left, the zero point corresponding with the 564,000 point on the lower scale, and the 564,000 point corresponding with the zero point on the lower scale. Marginal returns in the two markets are also shown.

In a competitive market, the price received by growers in the market of fresh cranberries and that received from processors would tend to be equal.[7] Any deviation from equality would result in the diversion of berries to the market in which the higher price prevails, until the equilibrium is restored. The point of equilibrium is indicated by the intersection of the two average revenue curves: the average revenue curve in the market of fresh cranberries, and the average revenue curve in the market of berries

4. Growers' average revenue in the fresh cranberry market.
5. Growers' average revenue in the market of cranberries for processing.
6. The proportion of cranberries contained in a one-pound can of cranberry sauce is roughly one-third, but varies slightly from year to year. Estimates were obtained from Cranberry Canners, Inc.
7. Except for differences in quality (see Section IX, below).
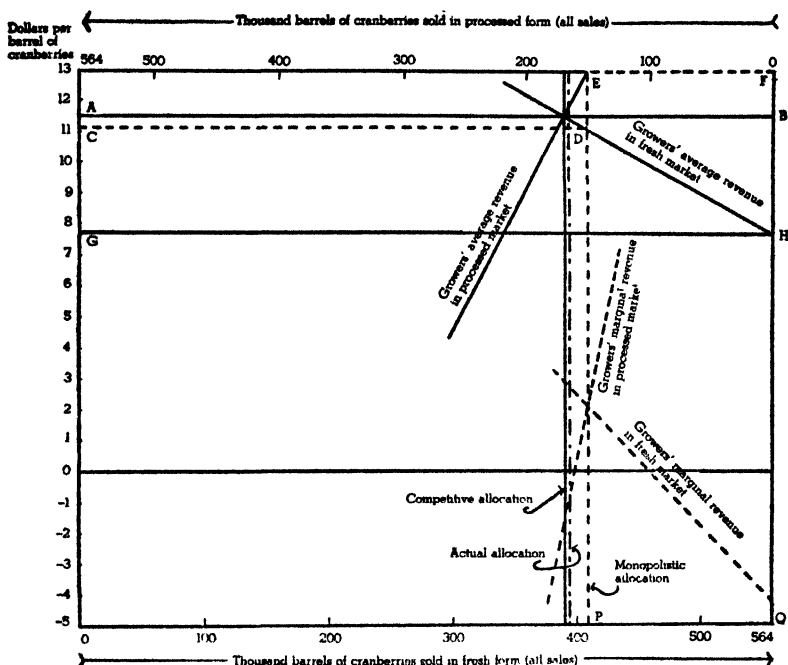
FIGURE XIII
MONOPOLISTIC, COMPETITIVE, AND ACTUAL ALLOCATION OF SALES
BETWEEN MARKETS OF FRESH AND PROCESSED CRANBERRIES IN 1940

for processing. In 1940 competitive bidding for the crop would
have resulted in a price of $11.50 per barrel for cranberries in both
markets, the sale of 389,000 barrels in the fresh market, purchase
of the balance (175,000 barrels) by processors, and a total revenue
to growers equal to $11.50×564,000=$6,487,000.[8]

If, however, the markets are completely dominated by a
monopolistic coöperative organization, which aims at increasing
the return to growers, and if the markets are independent, it can be
shown[9] that returns from a given supply are maximized by allocating
the supply in such a manner as to equalize the marginal, rather than
the average, returns from both markets.[1] As long as marginal

8. Represented by the area ABOQ in Figure XIII. See Table V-A.
9. See Joan Robinson, op. cit., and Waugh, Burtis, and Wolf, op. cit.
1. This does not, of course, preclude subsequent equalization of average
returns (prices) to growers, regardless of the use of the product. Such a policy
of "pooling" has in fact been pursued by the cranberry marketing organiza-

TABLE V

MONOPOLISTIC, COMPETITIVE, AND ACTUAL ALLOCATION OF SALES BETWEEN MARKETS OF FRESH AND PROCESSED CRANBERRIES IN 1932, 1936, 1939, 1940, 1941, AND 1942[1]

Year	Cranberries Marketed (Thousand Barrels)			Average Revenue to Growers (Dollars per Barrel)			Total Revenue to Growers (Thousand Dollars)		
	Fresh Market	Processed Market[2]	Total	Fresh Market	Processed Market[2]	Weighted Average of Two Markets	Fresh Market	Processed Market[2]	Total
A. Competitive Allocation									
1932........	585	—	585	5.9	—	5.9	3452	—	3452
1936........	394	101	495	10.9	10.9	10.9	4295	1104	5399
1939........	505	176	681	8.8	8.8	8.8	4444	1549	5993
1940........	389	175	564	11.5	11.5	11.5	4474	2013	6487
1941........	458	227	685	10.4	10.4	10.4	4763	2361	7124
Average of Above.	466	136	602	9.20	10.33	9.45	4286	1405	5691
1942........	325	269	594	13.9	13.9	13.9	4518	3739	8257
B. Monopolistic Allocation									
1932........	530	55	585	7.2	4.8	7.0	3816	264	4080
1936........	414	81	495	10.5	15.0	11.2	4347	1215	5562
1939........	540	141	681	8.0	13.2	9.1	4320	1861	6181
1940........	410	154	564	11.1	13.0	11.6	4551	2002	6553
1941........	492	193	685	9.7	12.9	10.6	4772	2490	7262
Average of Above.	477	125	602	9.14	12.53	9.85	4361	1566	5927
1942........	365	229	594	13.0	15.7	14.0	4745	3595	8340

C.

Actual Allocation

1932..............	550	35	585	6.13³	6.4⁴	6.1	3372	224	3029
1936..............	399	96	495	11.79³	12.0⁴	11.4	4704	1152	5461
1939..............	526	155	681	8.34³	9.0⁴	8.4	4387	1395	5235
1940..............	394	170	564	10.96³	9.2⁴	10.8	4318	1564	5504
1941..............	448	237	685	10.20³	9.8⁴	10.3	4570	2323	6445
Average of Above.	463	139	602	9.22	9.58	9.30	4270	1332	5602
1942..............	412	182	594	11.13³	⁵	—	4586	—	—

D.

Allocation of all sales to fresh market

1932..............	585	—	585	5.9	—	5.9	3452	—	3452
1936..............	495	—	495	8.7	—	8.7	4306	—	4306
1939..............	681	—	681	4.9	—	4.9	3337	—	3337
1940..............	564	—	564	7.7	—	7.7	4343	—	4343
1941..............	685	—	685	5.5	—	5.5	3768	—	3768
Average of Above.	602	—	602	6.38	—	6.38	3841	—	3841
1942..............	594	—	594	8.2	—	8.2	4871	—	4871

[1] Disregarding the quality factor (see Section IX)

[2] Cranberry sauce only. Marketings of other cranberry products were negligible, except in 1942 when 50 per cent of the total pack was dehydrated on Government order.

[3] Average price paid to growers by the Sales Companies, minus cost of quarter barrel boxes

[4] Average price received by Cranberry Canners, Inc. for fresh-fruit equivalent of cranberry sauce, minus operating costs (including cost of sugar in sauce) The prices actually received by members of Cranberry Canners were as follows (in dollars per barrel): 1932, 6 00; 1936, 10 00; 1939, 8.60; 1940, 10.50; 1941, 10.50; 1942, 10 50

[5] Owing to large-scale dehydration of cranberries, operating costs are not comparable with earlier years.

returns are higher in one market, the combined income from both markets can be increased by diverting a small quantity from the market in which marginal returns are lower to the one in which they are higher. The point of optimum (monopolistic) allocation is indicated by the intersection of the two marginal revenue curves. In 1940 the total revenue to growers would have been maximized by allocating 410,000 barrels of cranberries to the fresh market and 154,000 to processing. The quantity sold in the fresh market would have brought $11.10 per barrel to the grower, while the quantity diverted to canning would have netted $13.00 per barrel. The corresponding total revenue to growers would have been $11.10×410,000 = $4,551,000 for fresh berries,[2] and $13.00×154,000 = $2,002,000 for berries diverted to canning,[3] or a grand total of $6,553,000.[4]

The actual allocation of the supply in 1940 is shown in Table V–C. In that year, 394,000 barrels were sold in the market of fresh cranberries, at an average return to the grower of $10.96, and 170,000 barrels in the market of berries for processing, at an average return to the grower of $9.20.[5] The total revenue to growers thus amounted to $4,318,000+$1,564,000 = $5,882,000. The size of the differences between this figure and the estimated competitive and monopolistic revenues calculated on the basis of the demand curves emphasizes the large margin of error in the material,[6] which renders comparisons for individual years virtually

tions. (See e.g. the New England Cranberry Sales Company's notice on "Pooling Arrangements for the Season of 1942," September 18, 1942.)

2. Represented by the area CDPO in Figure XIII.

3. Represented by the a.ea EFPQ in Figure XIII.

4. See Table V–B.

5. The actual price received by members of Cranberry Canners, Inc. in that year was $10.50. This price, however, does not necessarily reflect the conditions prevailing in the market for processed cranberries (see p. 357 n.).

6. Errors inherent in the data and analysis and in the market behavior of buyers and sellers. In particular, the data for actual net returns for cranberry sauce in individual years are of limited reliability, because of the difficulty of deriving the operating costs appropriate to each year's marketings from those corresponding to each year's operations (manufacturing, storage, etc.).

With these limitations in mind, it is nevertheless interesting to examine the results of our analysis for the first and last of the years covered. In 1932, Cranberry Canners would apparently have been unable to compete for any part of the supply without taking a loss. The best price they could have offered was $6.50 per barrel; but this price was profitable only for a quantity of 42,000 barrels. Smaller quantities could have been processed only at steeply increasing unit costs, and larger quantities would have been absorbed by the

useless for analytical purposes. It is believed, however, that a comparison of the average for five years[7] may be of some value.

It can be seen in Table V that, on the average, during these years competitive bidding of the Exchange and Cranberry Canners for the supply of cranberries would have resulted in the allocation of 466,000 barrels to the market of fresh cranberries, and of 136,000 barrels to processing. The net return to growers would have been $4,286,000 and $1,405,000, respectively, in the two markets, or a grand total of $5,691,000.[8] The grower's average revenue would have amounted to $9.45 per barrel. Assuming, now, that the two marketing organizations got together with the purpose of maximizing returns to growers, and assuming they had full control of the market, the best they could do would be to allocate 477,000 barrels to the fresh market, and 125,000 to processing.[9] This would have increased slightly the returns in

market only at steeply declining prices (if the possibility of carrying over part of the supply is neglected). With 42,000 barrels diverted to processing, however, the balance of the supply (543,000 barrels) would have brought $6.90 per barrel in the fresh market, and the Exchange would have been able to bid successfully for an additional 10,000 barrels at a price better than $6.50, thus depriving Cranberry Canners of the supply necessary for profitable operation. As a result, total returns under competitive bidding would have been only $3,452,000, or $5.90 per barrel. With monopolistic allocation, on the other hand, it appears that 530,000 barrels could have been sold in the fresh cranberry market at $7.20 per barrel, and 55,000 barrels could have netted $4.80 in the market of cranberries for processing, resulting in a total revenue of $4,080,000, or a net gain of $628,000 compared with total returns under competitive bidding, the largest gain in any of the six years examined. The actual allocation was between these extremes.

1932 and 1942 are the only years in which the analysis indicates that an increase in marketings of sauce would have been profitable. In all other years the sales of sauce seem to have exceeded the optimum. (See, however, n. 9 below). The decline in marketings of sauce in 1942 was due to war-time restrictions on canning. Price regulations and other war-time factors were probably also responsible for the relatively low returns to growers in that year. The large demand in relation to a supply reduced by government purchases of dehydrated berries would have supported an average price to growers of $13.90 per barrel under conditions of competitive bidding, or about three dollars in excess of the actual average price. Under monopolistic allocation, nearly the same price, $14.00 per barrel, would have been obtained by growers.

7. 1932, 1936, 1939, 1940, and 1941.
8. See Table V-A.
9. The allocation may be modified by considerations of long-run profitability. It may have been advantageous for the monopoly to increase marketings of canned cranberries beyond the point of maximum returns for a particular year in order to stimulate demand for the new product.

both markets: the total revenue would have amounted to $5,927,000.[1]

The striking fact emerging from this comparison is the relatively small size of the gain resulting from monopolistic discrimination. Even assuming perfect insight into market conditions, the monopolistic allocation of the given supply would have increased returns to growers by only $236,000 per annum, or four per cent, compared with competitive bidding. This result can be accepted with a considerable degree of confidence, since it is relatively unaffected by statistical errors and by possible biases in the statistical series.[2]

Comparisons with the allocations and returns actually observed during the five years covered by the analysis must be interpreted with greater caution. It is interesting to note, however, that the actual allocation of the crop during these years appears to approach closely the allocation between the two markets which would have prevailed under conditions of competitive bidding.[3] On the average, 463,000 barrels were allocated to the fresh market, and 139,000 barrels to processing; the resulting revenue to growers amounted to $4,270,000 in the fresh market, and $1,332,000 from processors, or a grand total of $5,602,000, which is slightly less than the amount indicated for competitive allocation.

The failure of the two marketing organizations to increase returns above the competitive level is, however, readily explained by the lack of adequate control over the supply. In 1940, for instance, a monopoly controlling the total supply of cranberries could have obtained a return of $13.00 per barrel in the market of processed cranberries, and $11.10 per barrel in the market of fresh cranberries. But let us suppose that as little as 21,000 barrels[4] — less than four per cent of the total supply of cranberries — escape control by the marketing monopoly. Diversion of this quantity to independent canners would be sufficient to defeat any attempt at monopolistic allocation, as it would drive returns from canned cranberries down to the competitive level.[5] Actually, more than 30 per cent of the total supply were uncontrolled in 1940.

1. See Table V–B.
2. See Section IX.
3. See Table V–C and page 363, n. 9.
4. Twenty-one thousand barrels is the amount of the difference between the quantities canned under competitive allocation (175,000 barrels) and monopolistic allocation (154,000 barrels). See Figure XIII.
5. If returns to members of the marketing organizations are equalized

One may wonder how cranberry growers would have fared without an outlet for processed cranberries. If the entire supply had to be sold for fresh consumption, total returns, as indicated by the demand curve for fresh cranberries, would have amounted to $3,841,000 per annum, a loss of $1,761,000 or more than 30 per cent compared with actual returns. The difference is slightly larger if comparison is made with the estimated returns under competitive bidding, and still larger if compared with the maximum returns available to a marketing monopoly.[6]

IX

Up to this point the analysis has been based on the assumption that cranberries are a homogeneous product. In reality, however, there are significant differences due to variety, grade, and season. In a normal year, nearly one-half of the supply is of the "Early Black" variety, which appears first on the market. Shipments of this variety reach their peak in late September and early October. Late in October and during November and December, the bulk of the marketings are of the "Late Howe" variety, which also accounts for almost one-half of the crop. Because of their superior quality and their marketability during the holiday season, Late Howes fetch a higher average price than Early Blacks. In addition, quality premiums are paid for the better grades of each variety.

It is only in the fresh cranberry market, however, that quality is a factor in price. From the point of view of the processor, cranberries are a homogeneous product; hence the lowest-grade berries are processed. The increasing importance of processing in recent years has resulted in raising the price of berries to be

under a pooling scheme, the independent canners would still find it advantageous to buy cranberries at the pool price until returns from processed cranberries have declined to that level. This in turn would force returns from all canned cranberries down, and thus the pool price, etc., until the competitive level is reached all around.

6. The loss would be even greater if the lower quality of cranberries diverted to processors were taken into account (see Section IX, below). It must be remembered, on the other hand, that the above calculations apply only to independent markets. Independence between the demand for fresh cranberries and the demand for cranberry sauce was found for the observed range of variations. It is reasonable to assume, however, that in the extreme case where cranberry sauce disappears from the market, part of the demand for the canned product would be transferred to fresh cranberries, thus raising the price of the latter.

processed, and in reducing the range of grades sold fresh and hence the range of prices paid for fresh cranberries. This development has been consummated by monopolistic pooling and equalization schemes.[7]

If the two organizations competed for the supply, their competition would focus on a grade of berries which is marginal from the point of view of either market. The kind of berries for which they might compete is therefore represented by the lowest grade sold in the fresh market in each year. Hence the price properly to be compared with the price paid by Cranberry Canners is not the *average* price received in the fresh market — which includes premium varieties and grades that would never be considered for canning — but the *lowest* price.

Unfortunately, no price series is available which is clearly representative of the grade of berries for which the Exchange and Cranberry Canners might compete. Various indications, including the average spread between the price of Early Blacks and Late Howes, point, however, to a differential of about six to ten per cent between the average and the lowest fresh market price.

In order to investigate the consequences of ignoring the quality factor, new calculations were made on the basis of the (rather extreme) assumption of a fresh market price ten per cent below the average price received by growers in each year in that market; but the results merely confirmed the conclusions of the original analysis.

X

The above analyses of cranberry sales are no doubt subject to serious limitations. Both the price and cost series are affected by large errors and a possible bias due to the quality factor. Furthermore, relatively small errors in the shape of the demand and cost curves result in large errors in the total revenue curves. The results of this study should therefore be considered as preliminary and subject to further refinement and test. With these reservations in mind, we may proceed to reëxamine the antitrust indictment of the two cranberry marketing organizations in the light of our findings.

7. One such scheme, an "All-Season Pool" for all varieties regardless of their use for fresh or canned consumption, was inaugurated in 1942 by the New England Cranberry Sales Company. Under this arrangement, premiums are paid only for berries grading over one-half inch.

(1) The statistical analysis of the marketing policies of the Exchange and Cranberry Canners during the past decade tends to cast doubt on the validity of the Government's charge of monopolistic allocation of the supply.[8] Any attempts which may have been made by these organizations thus to assure to their members returns over and above the competitive level were bound to fail because of inadequate control of the market. However, even if they had succeeded in attaining complete control of the supply, the possible gains from monopolistic discrimination would not have exceeded four per cent of the growers' total gross revenue.[9]

(2) The monopolistic allocation of a given supply between different markets is only one of several ways in which a monopolistic coöperative organization is able to increase the revenue of its members. One might expect, for instance, that an even more effective means of increasing the net returns of the members of the two marketing organizations would be to restrict the production of cranberries to the point where marginal revenue equals marginal cost. It has often been pointed out that without production control any increase in revenue resulting from monopolistic marketing practices can only be temporary.[1] The extra profits being made in the industry would call forth additional output until prices were driven down to the competitive level.

There is, however, no evidence of deliberate restriction of production or entry in the cranberry industry, and so far as can be

8. See Section IV.

9. It is also charged in the Indictment that the defendants attempted to "suppress and prevent competition between cranberry products and cranberries." It is not clear whether this is merely an elaboration of the preceding charge, concerning allocation of berries to the two markets. A statement in Part IV of the Indictment, Nature of Trade and Commerce Involved, indicates, however, that something else is meant. "Cranberries and cranberry products are, to a large extent, in competition with each other," it is stated, "and consumers may easily substitute one product for the other depending upon the prices at which cranberries and cranberry products are sold." Actually, it has been shown, there is practically no substitution between fresh cranberries and cranberry products; fluctuations in the supply and price of processed cranberries do not seem to affect the demand for fresh cranberries, and vice versa. (See Section V.) In other words, the demand for fresh cranberries and the demand for processed cranberries are mutually independent, at least within the considerable range of fluctuations observed in the past. It is possible that even if Cranberry Canners were able to withhold the canned product from the market during the months when fresh berries are available (which clearly they are unable to do), this would not substantially increase the demand for fresh berries.

1. See John D. Black, op. cit. Also, by the same author, "Social Implications of Restriction of Agricultural Output," *American Economic Review, Supplement,* Vol. XXI, No. 1, March, 1931.

ascertained, no part of the crop has ever been destroyed for the purpose of maintaining prices; nor does the indictment charge such practices.

But the lack of interference with cranberry production can be readily explained by factors other than self-abnegation. Firstly, with the given degree of market control the ability of the two organizations to carry out successfully a policy of crop control is open to serious doubt. Secondly, natural barriers have limited the expansion of acreage and the entry of new producers. High initial costs of investment have discouraged and retarded acreage expansion, even where it may have appeared profitable. Furthermore, any decision to increase the acreage does not result in increased production until several years later. Expansion of production was therefore largely confined to increasing the yield per acre. On the other hand, ever since canning came to the fore, there has been a rapidly expanding market for cranberries. This combination of favorable circumstances on both the demand and supply sides has so far prevented the occurrence of a glut such as might spur the members of a farmers' coöperative into restrictive action. It is, in fact, possible that during the period covered by our analysis the demand has so far outrun the supply[2] that net profits to growers could actually have been increased by *expanding* production rather than by restricting it; but the lack of data on costs of producing cranberries makes it impossible to test this statistically.[3]

This is therefore a period of lag. It is quite possible that future years will see the supply catching up with the demand. High margins of profit may induce the large investments necessary for a further expansion of the bog acreage. Yields per acre may reach even higher levels. If production is increased, and if at the same time the rate of expansion of the processed cranberry market slows down, production control might well become an issue.

(3) If the available economic and statistical evidence appears to exonerate the two cranberry marketing organizations, so far as the past is concerned, this is probably due to the fact that lack of adequate control of the market has so far prevented the effective

2. See p. 345, n.

3. In all six years analyzed (1932, 1936, 1939, 1940, 1941, and 1942), *gross* returns to growers could have been raised considerably by increasing the total quantity of cranberries marketed. Sales of fresh cranberries fell short of the point of maximum gross returns in all years except 1932, when the maximum was just about reached. Marketings of processed cranberries fell short of the point of maximum gross returns in 1932 and 1942, reached the maximum in 1940, and exceeded the maximum in 1936, 1939, and 1941.

manipulation of the supply. The charges concerning attempts by the Exchange and Cranberry Canners to extend their control to non-members are all the more serious for this reason. A very high degree of control — probably more than 90 per cent — is required for effective price discrimination in this market. The general welfare requires that the Government step in either to prevent this degree of control from being attained, or if this is impossible, to prevent it from being exploited for the benefit of a few.

Without wishing to generalize unduly the results of a particular analysis, the authors submit that several conclusions may be drawn from it. First of all, it emphasizes the need for economic and statistical criteria in evaluating monopolistic practices, instead of purely legal criteria. There can be little doubt that the two marketing organizations "conspired," that they acted in combination; but they seem to have gained little by doing so. Even if they had complete control of the market and had allocated their sales so as to maximize returns to their members, the cost to the consumer would have been relatively small, particularly if it is compared with the gains available to producers who, with or without overt acts, manage to restrict production.

If it appears, nevertheless, that large profits are being made in the industry, these must be ascribed to factors outside the scope of the indictment. There can be little doubt that the profits resulting from the introduction of canning and from the rapid development of the demand for processed cranberries in the face of a lagging supply exceed by far those which might be obtained by monopolistic allocation policies.

This raises an interesting general problem. In the effort to adjust the tools of economic theory to the present-day reality of monopolistic competition, there may have been a tendency, in recent years, to overstress the importance of monopolistic situations and practices in vitiating the "ideal" structure of competitive prices, and to overlook other institutional and "frictional" imperfections of the price structure. It is quite possible that, by and large, dynamic factors such as shifts in demand and innovations,[4] in combination with lagging supply responses, are equally or more important in distorting the structure of relative prices than are deliberate monopolistic practices.

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4. This element has been stressed particularly in the writings of Joseph A. Schumpeter.

JUDICIAL PROCEDURE IN LABOR UNIONS[1]

SUMMARY

The problem of discipline, 370. — Intervention by the courts: action beyond union's authority, 372; action against public policy, 373; remedies allowed are futile, 374; requirement of a fair trial, 375. — Judicial processes within trade unions: the problem, 376; punishable conduct, 377; initial action, 381; channels of appeal, 382; comparison of AF of L and CIO, 383. — Intervention by general or international officers, 383. — Summary of findings, 384.

The expansion of membership and power of trade unions, while improving the bargaining position of millions of workers, raises a number of problems of great importance. Labor unions have been regarded as private organizations. Recently a Massachusetts court held: "It well may be that an applicant for membership is able and willing to comply with the laws and by-laws, but it by no means follows from this that the members of such a voluntary organization can be required to admit him to membership."[2] This opinion conforms to the common law view that a labor union is a voluntary association and has power to exclude anyone from membership.[3] Upon joining a union a worker agrees to abide by its rules and regulations, and the union has the right to discipline those who violate its constitution, by-laws, rules and customs.

An organization of labor is formed to achieve a certain objective. In order to achieve this aim the union must have the power to control and to discipline its membership, force obedience to its working rules, and compel the carrying-out of contractual obligations.

Many problems of intra-union relations arise out of the many-sided character of a labor union. Democracy is desirable, as long as it does not impede the effective functioning of the union. A union functions on two planes. First, a labor organization welds its members into an integrated unit, so that it presents a common front to the employer during bargaining negotiations. Second, the union must carry out the commitments it has undertaken in its

1. The research for this study was aided by a grant from the Social Science Research Council. I am also indebted to Professor E. E. Witte and to Mr. Ben Stephansky for many helpful suggestions.
2. Walter v. McCavel, 309 Massachusetts 260 (1941).
3. Mayer v. Journeymen Stonecutters' Association, 47 New Jersey Equity 519 (1890); Williams v. Quill, 277 New York 1 (1938).

contract with the employer. Both activities are likely to set in motion divisive influences, which the union must overcome if it is to be effective. Consequently, a union must have the power to expel those members who violate its working rules.

Serious problems may arise if the union is unable to force its members to obey its agreements with the employer. The unfavorable reaction of the employer to indiscipline and contractual violations is likely to create difficulties for the union during renewal of its contracts. An employer bedeviled by "outlaw" strikes may well charge that he has failed to purchase industrial peace by the concessions he made to the union, and may consequently become less willing to grant further concessions. On the other hand, the demands of the rank and file are likely to be more extreme and less related to the realities of economic life. Union officers are usually better informed than the rank and file on industrial practices prevailing in other plants and in industries, and they are usually more conversant with general economic problems. Moreover, they are likely to be more eager than many members of the rank and file to protect the union against weakening itself by ill-advised acts. Greater awareness and more urgent concern for the union's welfare is not necessarily due to the moral superiority of the union officer. It can often be explained by his more intimate relations to the union and his more direct dependence upon it. The union officer's job is the preservation and the strengthening of the union's position; and, despite grievances and injustices, his duty is never to risk imperiling the union itself. From the point of view of the members, this is a sound policy; for as long as the union survives and its power is not weakened, the opportunity for redressing grievances is never fully lost.

Unions must therefore have the power to direct their membership. Refusal by an official to yield to every whim of the rank and file, or the insistence by the officers that unpleasant compromises be made, demonstrates no basic fault in the structure of intra-union government. The leaders must, therefore, have both the membership's confidence and the power to influence decisions. This situation accounts for the legal view that in all cases involving discipline of members the remedies offered by the union must be exhausted before the courts will assume jurisdiction.[4] Professor Chafee has

4. Zechariah Chafee, Jr. "The Internal Affairs of Associations Not for Profit," *Harvard Law Review*, May 1930, p. 993.

summarized the dominant view of the courts that "clubs, trade unions, professional associations, secret societies, churches and educational institutions" are private organizations, that is, those "bodies . . . exist for other purposes than making money."[5] On the other hand, "corporations, partnerships, joint adventures, joint stock companies, and business trusts are frequently the objects of judicial control, but their activitities naturally cause public concern."[6]

The distinction drawn by the courts between bodies which cause public concern and those who do not was based on the question whether they were or were not engaged in the making of money. The basis for the courts' distinction seems in the light of experience to be too narrow. Nor is there much ground for classifying labor unions with private clubs. The latter exercise relatively little power over industry or over the community. However, a union's power to discipline is not absolute. Members accused of an offense against union regulations must be presented with specific charges, and allowed a fair trial in accordance with the rules of the union. The rules of the union must not violate the law of the land, or contravene sound public policy.[7]

INTERVENTION BY THE COURTS

Action Beyond Union's Authority. Whenever a labor union exceeds the authority granted to it by its constitution and by-laws, the courts tend to consider intervention justified. In Johnson v. International of the United Brotherhood of Carpenters and Joiners of America,[8] a member of a Nevada local was expelled for sharply criticising the union in general terms. He was brought up on charges and under a section of the constitution which makes "any officer or member who endeavors to create dissension" subject to expulsion, and upon admitting that he had made the statement as charged was ousted from the union. When his appeal was denied by the International President, he asked the court to order his reinstatement. The court found that the expelled member had not been served with written charges or notice of a hearing; nor had he been specifically informed what section of the constitution or

5. Ibid., p. 993.
6. Ibid., p. 993.
7. Otto v. Tailors' Protective and Benevolent Association of San Francisco, 75 California 314 (1888).
8. 52 Nevada 400 (1930).

by-laws he had violated. The court therefore ordered him reinstated, on the ground that the union had exceeded the authority granted in its own constitution and by-laws.

In a more recent case, Nissen v. International Brotherhood of Chauffeurs, Teamsters, Warehousemen and Helpers,[9] a member of a teamsters' local union in Iowa was expelled for not participating in a strike called by the local officers in violation of a contract. In defense of his conduct the expelled member maintained that he had not violated any provisions of the union constitution or by-laws. In ordering his reinstatement before he had exhausted the remedies provided by the constitution of the union, the court held that "if the action of the association is wrongful, or without jurisdiction . . . or not in compliance with the rules or constitutional provisions . . . the complaining one may resort directly to the courts."[1]

Action Against Public Policy. Courts will intervene if the acts of the union are against public policy. Cameron v. The International Alliance of Theatrical Stage Employees and Moving Picture Operators of the United States and Canada, Local Union No. 384[2] raised the issue whether the courts had the right to set aside an unfair union regulation governing the position and rights of members. The theatrical stage employees in Hudson County, New Jersey, created two types of memberships, a senior and a junior. Only senior members had a voice and vote in the affairs of the union, in the fixing of dues, and in the allocation of jobs. On the other hand, junior members paid five and one-half times as much dues annually as senior members. Moreover, junior members were technically as qualified as seniors. The junior members therefore sued to have the discriminatory provisions governing their union membership set aside.

In response to the union's claim that a member "must exhaust his remedy in the tribunal of his organization before he can invoke the aid of the civil courts," the New Jersey court held that this rule applies only where the issue is a social one. Even where property rights are involved, if the union has provided a remedy and the members have agreed to exhaust it before applying to the courts, the courts will not intervene until the remedy has been

9. 229 Iowa 1030 (1941).
1. Ibid., p. 1043.
2. 118 New Jersey Equity Reports 11 (1934).

exhausted. The remedies offered need not be exhausted, however, if the conduct protested is contrary to public policy. "In such cases, the public has an interest which transcends the rights and interests of the union membership, collectively or individually."[3] The union cannot use its power "as a means of oppression and injustice in respect of its members," or deprive its members of fundamental rights, or introduce "arbitrary or capricious discrimination between members of the union in respect of equality and opportunity to work." The effort of senior members to gain a monopoly of the labor market was held to be a restriction of the freedom of contract and therefore to be in contravention of the public interest.

On the same ground an Indiana court accepted jurisdiction in a case involving a different type of issue. A member of the Brotherhood of Locomotive Engineers, who testified before the Interstate Commerce Commission contrary to the wishes of the head of the union, had been expelled.[4] The court ordered the expelled member reinstated, on the ground that such expulsion was contrary to sound public policy.

Remedies Allowed Are Futile. The courts may also intervene in the internal affairs of a union if they find that the pursuit of remedies provided by the organization is futile and illusory. Robinson v. Nick[5] involved a suit of nineteen members of St. Louis Motion Picture and Projection Machine Operators' Union No. 143, affiliated with the International Alliance of Theatrical Stage Employees and Moving Machine Operators of the United States and Canada, to oust two officers from control and management of the local and for an accounting of funds. The officers whose removal was sought had been appointed by the International President, and one of them was a member of the General Executive Board, which exercised wide powers in the disciplining of the members. Little discussion of union problems was allowed, and the officers by suspending or expelling a member could prevent his employment at his trade in St. Louis. The court found evidence of abuse of power and misuse of the union's funds. In answering the question whether members of a labor union are barred from seeking redress in court by reason of their failure to

3. Ibid., p. 20.
4. Abdon v. Wallace, 95 Indiana Appellate, 604 (1932).
5. 235 Missouri Appeal Reports 463 (1939).

exhaust the remedies provided by the organization, the court held "that where the association has not acted strictly within the scope of its powers; or where fraud, oppression or bad faith is shown; or where it appears that an appeal within the organization would have been a vain and useless step, then the failure of the member to have availed himself of the remedies within the organization will not be a bar to his right to ask judicial interference."[6]

A similar view was taken by the Pennsylvania Supreme Court in Heasley v. Operative Plasterers and Cement Finishers International Association Local No. 31.[7] The International reorganized a Pittsburgh local union of plasterers, when the local went out on strike in violation of contract. Several workers were excluded from the reorganized local by an International officer, and consequently denied an opportunity to work on union jobs. The court held that "the right to contract for work is one of the most important of property rights, and therefore the power of a court of equity may properly be invoked to restrain its impairment." While "ordinarily the courts will not entertain jurisdiction in such cases, unless the remedies provided by the organization have first been exhausted, ... the law does not insist upon forms when resort to them would be an obvious futility."[8]

Requirement of a Fair Trial. A labor tribunal's decision will be upheld if it confines its disciplinary conduct within its authorized scope, allows a fair trial, and its actions do not contravene public policy. In Snay v. Lovely[9] a worker who had failed to pay a fine levied against her because of engaging in a strike in violation of contract, lost several jobs. She claimed she was unjustly suspended by the union and sought reinstatement through court action.

The court found that a member "by becoming a member of the union and agreeing to support it, entered into an obligation in the nature of a contract to become bound by its constitution and governing rules so far as not inconsistent with controlling principles of law. As an incident of membership she consented to be suspended or expelled in accordance with the constitution and rules of the union by its appropriate officers acting in good faith and in conformity to natural justice. Courts do not sit in review of

6. Ibid., p. 483.
7. 324 Pennsylvania 257 (1936).
8. Ibid., p. 262.
9. 276 Massachusetts 160 (1931).

decisions thus made by such officers, even though it may appear that there has been an honest error of judgment, an innocent mistake in drawing inferences or making observations, or a failure to secure all information available by a more acute and searching investigation."[1]

In McConville v. Milk Wagon Drivers' Union Local No. 226 of San Francisco[2] the court declared "the general rule is that in the matter of administering disciplinary measures an organization . . . acts in *quasi*-judicial character and so far as it confines itself to the exercise of the powers vested in it, and in good faith pursues the methods prescribed by its laws, such laws not being in violation of the laws of the land or any inalienable right of the member, its sentence is conclusive, like that of a judicial tribunal."[3]

JUDICIAL PROCESSES WITHIN TRADE UNIONS

It is clear that the courts are reluctant to intervene in the internal affairs of trade unions. Whatever merit the bracketing of trade unions with sewing circles and private clubs may have legally, it is doubtful whether such classification can be defended on economic grounds. Labor unions are powerful organizations, and their impact upon their members can be extremely serious. An expelled member may not only lose his particular job; under some circumstances, a worker might lose the use of skill and experience he had acquired over years. The protection of the individual against arbitrary conduct is therefore extremely important.

Although arbitrary action by trade unions against their members is certainly not unknown, it can not be called common. Our present information furnishes no basis for estimates. However, even if the magnitude of the problem is not great, the question remains whether the judicial processes guarantee fair treatment to the individual member. If the judicial procedures in labor unions do not assure quick, inexpensive and relatively sure justice, many members of unions would avoid actions that might expose them to prosecution under union constitutions, even though such action might be in the interest of the union and its members.

Honest, speedy, and impartial judicial processes are one of the essentials of a democratic society, and a surety against arbi-

1. Ibid., pp. 163–164.
2. 106 California Appeal 697 (1930).
3. Ibid., 697–698.

trary conduct by those in power. The same is true of judicial procedures in labor unions. We must, however, remember that a union must regard the conduct of its members from the point of view of the union's survival. The judicial procedure of the union is not an instrument for dispensing abstract justice, but is a means for keeping the union intact and effective. We are therefore not dealing with a problem of absolute justice, but with the possibilities of an individual securing a maximum degree of justice under a given institutional arrangement. Unless we are willing to concede the union's right to exercise control over its membership within its allotted sphere, any penalty the union inflicts would be a negation of justice. Such a summary view leads to a final and complete denial of the union's right to impose punishment for any cause, and inferentially denies the right of the union to exist or to function.

Whatever merit there may be in such a view, it is completely and unalterably opposed to the one implied in this paper. Anyone who recognizes the necessity, desirability, or inevitability of labor unions must also recognize their right to impose sanctions upon those members who violate their rules or impede their efforts. However, do the unions offer sufficient protection to the individual? Is punishable conduct clearly and simply defined? And is conduct forbidden in order to prevent destruction of the cohesiveness of the union or the impeding of its activity; or are the prohibitions designed to prevent justified and legitimate criticism of those in power?

Punishable Conduct. A wide variety of activities are held punishable, and the unions can impose a reprimand, fine, or other penalty for the commission of the prohibited offenses. An examination of the constitutions of eighty-one unions shows that punishable conduct is defined both generally and specifically. (Minor offenses, such as disobeying the presiding officer at a meeting, have been disregarded.) Eight of the punishable offenses are general in character. These are (1) violation of the constitution, by-laws, rules and laws of the union or its subordinate branches, (2) disobeying orders of officers, (3) slandering an officer or member, (4) circulating written material among members without permission of the union officers, (5) creating dissension, (6) undermining the union, (7) participating in outside meetings where union business is discussed, and (8) commission of a dishonorable act injurious to the labor movement or to the union. Fifteen other

offenses have been listed. All of them, except advocating the formation or joining a dual union, are specific in character. While it has reference to a specific act, advocating or joining a dual union can be used against members advocating changes within the union and informally combining to achieve this aim. Specific offenses include personal acts such as drunkenness and working at a gambling house and violation of trade rules. The latter includes strikebreaking, working with non-union men where such conduct is forbidden by the union, and failure to conform to union wage policies or to other requirements of the union in regard to conduct on the job.

While an attempt has been made to classify all offenses, a number were omitted. Some of the unlisted offenses are the prohibition against advocating the doctrines of Communism, Fascism and Nazism, found in the constitutions of the United Rubber Workers of America, the Glass Bottle Blowers' Association, the Brotherhood of Railway and Steamship Clerks, Freight Handlers and Station Employees, the United Mine Workers of America, and the International Printing Pressmen's Union of North America. The United Association of Plumbers and Steamfitters of United States and Canada prohibits discrimination against members in the allocation of jobs because of their membership or non-membership in fraternal orders; and the International Ladies' Garment Workers of America does not allow members to form groups or clubs without permission of the General Executive Board, except for campaign purposes three months before election. This step was taken to prevent the formation of permanent factional organizations within the union.

Thirty-six unions prohibit violation of the constitution, by-laws, rules and decisions of the International Union or the subordinate branches. This is obviously a very broad and indefinite prohibition. Only six unions require their members to obey the lawful orders of officers of the union. Very likely these orders are related to the enforcement of contractual obligations and trade rules governing conduct on the job, working on non-union jobs or with non-union men.

Eight unions penalize members gaining membership by misrepresentation. Falsifying the amount of time spent as an apprentice, the length of past work experience, or the prior membership are the offenses covered by misrepresentation.

Slandering an officer or member is explicitly prohibited in twenty-nine unions. This prohibition is one most easily abused by officers seeking to retain their positions. What is slander is not specifically defined in any union constitution. It is necessary to bear in mind that sharp differences over policy are likely to develop, and that union members may legitimately aspire for union offices In both situations harsh and uncomplimentary words may be used. The normal give-and-take of political debate must allow for a measure of vehemence and exaggeration, but under the anti-slander doctrine union members can be brought to trial and severely punished for exceeding the limits regarded by the officials as proper.

Circulating written material dealing with union business among members or locals without the permission of the General Executive Board is explicitly forbidden by twenty-one unions. This prohibition is based upon the desire of the union officers to prevent the circulation of scurrilous criticism which might injure the union among the membership. It is evident that this prohibition can be used to prevent the dissemination of justifiable criticism of the leadership and of a program of principles and action that some members may hold is necessary for the union's welfare. Undoubtedly, a union administration must have the right to prevent the dissemination of destructive attacks which might destroy the solidarity of the membership, but a blanket and unqualified prohibition can easily be made an obstacle to the free interchange of views among those dissatisfied with the policies of the leadership.

Creating dissension is a punishable offense in fifteen unions, and undermining the union or working against its interest is penalized in twenty unions. These offenses are very general and are closely related. The circumstances under which a member creates dissension are not expressly stated, and it is obvious that this charge depends upon the opinion of the officers. Legitimate opposition is frequently separated from dissension by a thin line. Moreover, if dissension is interpreted as dissatisfaction, all criticism has for its ends the creation of dissension; for only by arousing dissatisfaction among the members can improvement in administration and desirable change in policy be introduced. Undermining of the union is sufficiently general and even meaningless to be used as a weapon against dissidents not satisfied with the

conduct of the officials. What the officials may in some instances regard as undermining the union may be an attempt to bring about needed reform.

We must, however, avoid the assumption that the union needs no defense against spreaders of dissension or against those who would undermine its position. A union may have in its ranks misguided and glib enthusiasts anxious to lead the union into more venturesome directions, whose persuasive appeals may create serious internal difficulties. Neither must we overlook or minimize the importance of the provocateur, the hired agent working within the union to create distrust and suspicion. As the LaFollette Civil Liberties Committee revealed, such agents have been extensively used to destroy unions. It is therefore desirable to recognize that unions must be able to take positive steps against disrupters. But while the union's protective armament should not be weakened, the individual member should also be secure against broad and general charges inspired by personal spite or interest.

Participating in outside meetings where union business is discussed is prohibited in five unions. This rule is not directed at preventing the exercise of freedom of speech by the membership, but is aimed at cliques and factions who form independent caucuses to control union policy. The prohibition against revealing union business, contained in the constitutions of twenty-two unions, is aimed at those who work for groups outside the union who seek either to control the union or to destroy it. In a sense this type of clause supplements the one on participating in outside meetings discussing union business. Members of outside groups — such as the Communists or the Association of Catholic Trade Unionists — can thereby be prevented from disclosing union business. The same clause can be invoked against spies and private detectives.

Thirty-one unions have specific provisions against violation of trade rules. Some union constitutions cover more than one subject or situation. Such issues as working during strikes, for unfair employers, and overtime except under certain conditions would be classed under trade rules. Such rules concern the union's administration of the job. Even where no specific clause is provided, a union could proceed against those who violate trade rules under clauses governing the undermining of the union or working against the union's interest.

Nine union constitutions contain specific prohibitions against

violation of the trade agreement, but the union can utilize other provisions to proceed against violators of the union contract. Prohibitions against violation of the constitution, rules and by-laws, and disobeying of lawful orders of officers can also be used to punish violators of union agreements. There are therefore ample grounds for proceeding against recalcitrants, even when such action is not outlawed by specific provisions. Subcontracting is specifically prohibited by two union constitutions, and one union penalizes its members for failure to support older members at work. Three unions punish failure to install work safely. Eight unions severely penalize habitual drunkenness; and one, the Brotherhood of Locomotive Engineers, prohibits drinking of alcoholic beverages or selling liquor. The same union penalizes working at a gambling house or soliciting patronage for one. The Brotherhood also penalizes fraud against a carrier or the union, or joining a detective agency.

Only two unions, The Bricklayers, Masons and Plasterers' International Union of America, the Plasterers and Cement Finishers' International Association of United States and Canada, severly penalize discrimination against a member because of race, creed or color.

Twenty-three unions prohibit members from joining a dual union. This prohibition is designed to protect the union against members supporting an opposition union functioning in the same jurisdiction. Defrauding the union or members is expressly forbidden by thirty unions, and twenty-five unions prohibit action that is dishonorable or which might injure the labor movement. It is obvious that even where a specific prohibition does not exist, unions could take action under one of several general clauses.

Initial Action. Initial filing of charges is usually made by a member at the local. Charges must be specific and in writing. In virtually all instances where trial procedure is outlined, copies of the charges must be supplied to the accused. Some unions require that charges be read at local meetings, after which the charges are submitted to a trial committee, which may be a permanent committee or one selected to try a single case. In some unions the accuser and the accused can each exercise a limited number of challenges against members of the trial committee, who are thus automatically disqualified. Other unions provide for the appointment of the trial committee by the president of the local lodge. In

the International Typographical Union and the International Lithographers Union, the locals appoint a committee of five to investigate charges. If this committee finds sufficient evidence to warrant a hearing, a second committee is appointed to hold a trial. In most unions a trial committee will consider charges without a prior investigation, after they have been read before the meeting of the local lodge.

Members are summoned to appear for trial and furnish witnesses and testimony. Each side may select a union member to act as counsel. A majority of a committee usually suffices for a verdict. In a few instances the trial committee has final disposition of the case. Thus the American Federation of Musicians allows its Travelling Committee, subject to appeal to the convention, to fine or to expel a member for violation of union law. Unless rejected by the branch for which it serves or by headquarters, the findings of a majority of a trial committee of the National Maritime Union is final. The verdict of a trial board appointed by a branch of the International Brotherhood of Electrical Workers becomes the verdict of the branch. The overwhelming majority of unions do not leave the final verdict to the trial committee. Instead, the trial committee reports back to the local meeting, and the meeting decides by a mere majority, two-thirds, or three-fourths, vote to accept, reject, or amend the recommendations. If the verdict is guilty, a separate vote — usually a secret ballot — is taken on the penalty. Fines or reprimands as a rule require a majority of those voting or those present, and suspension and expulsion is either by a two-thirds or three-fourths vote of those present and voting.

Channels of Appeal. Appeals from the initial verdict are provided in virtually all unions, and must be taken within a given time after the decision has been rendered. The International Brotherhood of Electrical Workers allows either the accuser or accused a first appeal to the International Vice-President in charge of the district in which the case has arisen. Additional appeals can be taken to the International Executive Board and the convention. The decision rendered by the International Vice-President considering the first appeal is effective until overruled by a higher appellate body. Similarly, the Retail Clerks International Protective Association allows either party in the case to appeal (1) to the international Secretary-Treasurer, (2) the General Executive Board, and (3) the convention of the union. Before the first appeal

can be taken, fines up to fifty dollars must be paid, and the entire amount of the fine must be paid before additional appeals can be taken. The appeal procedure described above is typical. Unions which have amalgamated and shop locals may allow a first appeal from the shop local to the amalgamated local. This is the procedure in the United Aircraft, Automobile and Agricultural Implement Workers of America. In the majority of cases the procedure is to allow an appeal to the International President, the General Executive Board, and the convention. One step may be absent or there may be an additional one.

Some differences exist in the enforcement of penalty while appeal is pending. A member suspended by the International Typographical Union loses no benefits except the right to work as a printer. A number of union constitutions fail to deal with the position of a member appealing from a suspension or expulsion decision of his local lodge. Other unions do not enforce the decision while an appeal is pending.

Comparison of AF of L and CIO. In general it can be said that the disciplinary procedure of unions affiliated with the CIO is not basically different from that in unions affiliated with the AF of L. As we noted above, the two unions which have the most drastic clauses against racial discrimination in their constitutions are conservative building trades unions — the Plasterers', Cement Finishers International Association of the United States and Canada, and the Bricklayers, Masons and Plasterers' International Union of America. Discrimination against a member of the union because of his race or color is penalized by both unions by a fine of one hundred dollars.

INTERVENTION BY GENERAL OR INTERNATIONAL OFFICERS

A number of unions explicitly allow the International President, the General Executive Board, or both, to initiate and to hear charges against members of subordinate branches. Thus the General President of the Painters' Union can intervene whenever "charges involving a member or members . . . create a situation imminently dangerous to the welfare of the local union." The President can, under the above circumstances, suspend either a member or a local and notify the accused to appear for trial.

Similarly, the General President of the Plasterers' Union is "empowered to discipline the membership for proper cause, and

this authority shall include authority to suspend to expel after a fair and impartial trial any officer or member subject to the concurrence of the Executive Board." The General Executive Board of the Operating Engineers' Union can penalize members for "publishing or circulating literature of a defamatory nature against any candidate for office, or officer." Much greater power is given to the International President of the Electricians' Union, who can "suspend the cards and membership of any member who in his judgment is working against the welfare of the IBEW . . . or for creating dissension among members of the Local Unions." The General President of the Teamsters' Union can assume original jurisdiction whenever he believes that charges against a member endanger the welfare of the union.

Even when the authority to try members is not expressly given, the general officers can force the locals to act, because they usually have the authority to intervene in the affairs of the union and to suspend and replace officers. A local lodge can be ordered by the International President of the International Association of Machinists to try a member; and if the lodge refuses, the Executive Council can proceed with the trial. Not only can the General President of the operating engineers suspend members for violating their obligations; he can also suspend and remove officers of local unions and place locals under international supervision. Power to take over, personally or through a deputy, all books, papers, and financial accounts of any subordinate body of the union "summarily, when he deems it necessary," is vested with the President of the Carpenters' Union; the Executive Council of the Textile Workers' Union of America (CIO) can in an emergency suspend or expel members, officers, or subordinate locals. These are typical of the power possessed by the top officers of unions in the matter of discipline.

Summary of Findings

Union constitutions show a wide variation in their definition of punishable conduct. Some unions do not specifically define it, while other enumerate a long list of punishable acts. The local may prohibit offences not mentioned in the constitution of the International.

It is obvious that in many unions it is possible to bring members to trial upon broad and vague charges which can be used to

stifle legitimate criticism or demands for reform of union policy or practice. It must be recognized that the character, history, and internal relations within the union will largely determine the readiness of officials to exercise the power given to them. From our knowlege of union history, we may conclude that machinists, printers, railway unions, hatters, some of the garment trades, and a number of other unions are not in danger of abuse of power by the top officials. It would be unsafe to say as much for the unions in the building trades and in the coal-mining industry.[4]

In virtually all unions a member convicted of violating union rules can appeal to a higher tribunal. In those unions where the decision of the lower tribunal is binding until reversed, the member expelled will not be able to work on union jobs, a serious disability in industries where the closed shop is widespread.

The problem of punishing violators of union rules is a serious one for the union, for unions can only perform their functions effectively if they maintain discipline. While dissatisfaction may arise as a result of the union's lack of performance, discontent may also develop as a result of ignorance or ambition to win office. The forces of disunion must be held in reasonable check, but protection for well-founded and even well-intentioned opposition is also necessary. To meet both of these problems the organized labor movement might itself set up an impartial body to review complaints against arbitrary conduct of officials. While this may be the best method, experience with the impartial settlement of jurisdictional disputes in the building trades seems to indicate that the strong unions would not bow to decisions unfavorable to them. Unless such a step is taken, the unions may be encouraging government intervention in their internal affairs.

<div align="right">PHILIP TAFT.</div>

BROWN UNIVERSITY

4. An ex-officer of the miners' union who criticised John L. Lewis has recently faced expulsion for his temerity.

ECONOMIC ASPECTS
OF TERMINATION OF WAR CONTRACTS[1]

SUMMARY

Nature and scope of the problem, 386. — Announced objectives of terminations, 388. — Implementation of legislative objectives, 389. — Statistics of terminations, 392. — Effect of practices on stated objectives, 394. — The economics in action, 397. — The contributions of economics, 400. — Conclusion, 404.

The phenomena of war contract termination[2] and the resulting problems of (1) readjustment of production from a war-time basis to a peace-time basis and (2) disposition of property on hand as a result of termination are matters of the first magnitude to economists. With an estimated[3] 100,000 prime contracts and at least 1,000,000 significant subcontracts likely to be involved in the termination program, amounting to 50 to 150 billions in the contract price of items cancelled and 85 billions of Government-owned property (including 15.5 billions in Government-owned plants and equipment), the tools of the professional economist can be applied to fertile ground in the readjustment program. The techniques of many professions are essential to an efficient

1. This article is in no sense to be taken as an expression of the views of the War Department or of any other Federal agency.

2. From the "legal" point of view see my "Termination of War Contracts," 44 Columbia Law Review, 864 (1944), my "Comparative Study of Termination Articles in Government War Contracts," 1945 Wisconsin Law Review, 41, my "Government Liability to Subcontractors Under Terminated CPFF Contracts — The Third Party Beneficiary Theory," 31 Virginia Law Review, 161 (1945). From the point of view of "business techniques" see my "Principles of War Contract Termination," 18 Journal of Business, 35 (1945). From the point of view of the economist see E. J. Howenstine, Jr., Economics of Demobilization (1944), A. D. H. Kaplan, The Liquidation of War Production (1944), and J. D. Sumner, "The Disposition of Surplus War Property," 36 American Economic Review, 457 (1944).

A "basic" bibliography and a "legal" bibliography will be found in my Columbia Law Review article cited above, pp. 864ff., note 1, which also contains a complete description of the mechanics of current terminations and historical material.

3. Report on Contract Termination by A. J. Browning, Director of Purchases, Headquarters, Army Service Forces, War Department, p. 1.

On the estimates of contract prices of items to be cancelled, see J. H. LaBrum, "Termination of War Contracts for the Government's Convenience," 18 Temple University Law Quarterly, 6 (1943). On estimates of surplus war property, see J. D. Sumner, op. cit.

readjustment program, but the burden of planning and policy-making rests with the economist.

The data of mobilization are, of course, established by (1) the military *requirements* expressed in terms of manpower, materials and productive equipment, and transportation, and (2) by the available *resources* expressed in the same terms. The economist endeavors to establish an equation, the balancing term of which is output for civilian consumption. All the terms are geared to time and the monetary factor. This would seem to present an economic problem no different from that which the economic theorist is accustomed to handling. In essence that is correct; but the quantitative differences in some of the magnitudes (as compared with peace-time economics) is so wrenching as to require the discard of conventional rules of thumb. For example, the extent to which the monetary and fiscal factor (for present purposes) is restricted by ration, wage, price, priority, tax, export-import, and other wartime controls is important quantitatively.

Another important point is that the economic problems of mobilization, are less difficult than those of demobilization, particularly when mobilization occurs at a time when the economy is not at "full employment." In mobilization the emphasis is more on production from the engineering-efficiency viewpoint. Costs are distinctly a secondary consideration. Civilian production that is not rated essential acts in an accordion fashion — absorbing the fluctuation of "essential" production.[4] In demobilization, however, the cost-efficiency standard resumes its "normal" primacy. Further, even if the classification of "essential" production is retained during readjustment, the quantitative significance of the "essential" segment shrinks to the point where "non-essential" civilian production is no longer an accordion. The technique and *milieu* of mobilization cannot be transplanted to demobilization; one process is not the reverse of the other.

The economist, of course, approaches the problem of terminations from a different viewpoint than the vast majority of technicians concerned with the subject[5]. In planning and formulating

4. See the type of analysis in Milton Gilbert's "War Expenditures and National Production," Survey of Current Business, Department of Commerce, March, 1942.

5. For example, I have advocated the divorcing of the settlement of claims of prime and subcontractors as a result of terminations from the disposal of property (see my Journal of Business article cited supra, n. 1). This

policies he considers *all* the data of the situation, whereas the other technicians are concerned primarily with the execution of the decisions made by the economist.

ANNOUNCED OBJECTIVES OF TERMINATIONS

The whole problem is complicated by the question of social policy. In an "as is" economy in peace time, the "social" economist seeks to get powers from Congress (or additional powers). That difficulty does not exist in demobilization, since the economy is "in the midst of things" — the Government has vast holdings and some social policy must govern, by implication at least, the disposition of them. While, theoretically, the same *type* of "social" decision must be made in either mobilization or demobilization,the matter of inertia distinguishes the two situations.

The Contract Settlement Act of 1944[6] and the Surplus Property Act of 1944[7] voice the objectives defined by Congress. Both Acts, in turn, rest on the "Baruch Report."[8] The objectives of the Contract Settlement Act of 1944 are stated in section 1:

1. Maximum war production and expediting of reconversion,

2. Final and equitable settlement of terminations and adequate interim financing,

3. Uniformity among Government agencies,

4. Advance notice of terminations consistent with national security,

5. Prompt clearance of property left over,

6. Detection of fraud.

The objectives of the Surplus Property Act of 1944, as stated in section 2, are twenty in number, but they can be reduced to the following:

1. After first giving consideration to using property elsewhere in the war effort, to (1) aid "the reëstablishment of a peace-time

policy, however, would apply only to the technicians (lawyers, accountants, negotiators, salvage experts, etc.) who are responsible for proceeding from a *datum* — the particular contract termination *once it has been decided upon.* For the economist the problem is *what* contract to terminate *when.* To use a military analogy, the economist is concerned with strategy, the other technicians with tactics.

6. Public Law 395, 78th Congress, 2d sess., July 1, 1944.

7. Public Law 457, 78th Congress, 2d sess., October 3, 1944.

8. Report on War and Postwar Adjustment Policies (Bernard M. Baruch and John N. Hancock), Senate Document No. 154, 78th Congress, 2d sess., February 15, 1944.

economy of free independent private enterprise," (2) aid the development of the maximum number of independent operators in trade, industry and agriculture, (3) aid the achievement of full employment;

2. To discourage monopolistic practices, preserve the competitive position of small business, encourage family-type farming, aid veterans in enterprises;

3. To distribute to consumers at fair prices, develop foreign markets, avoid dumping, use normal channels of trade, dispose of transportation equipment so as to insure a unified national system;

4. To dispose of property promptly and at the fair value, in so far as consistent with other objectives;

5. To discourage speculation and reduce excessive profits.

The bulk of the "social policy" for the readjustment program is thus found in the Surplus Property Act of 1944. Basically, that policy seems designed to put the economy back to a prewar condition. No radical departures are involved. Perhaps the major difference in policy from the program followed after World War I is the different position with regard to price. Where price was the chief consideration in World War I disposals, the policy now is to give primary consideration to many other objectives and to consider price only secondarily. Compartmentalization is faulty. Inevitably differences in price between alternative disposals will be weighed against the merits of achieving other alternative objectives. Thus price may, for practical purposes, slip in the back door as the dominant factor, particularly in view of the personnel likely to carry out the policies and the fact that their success with the program is likely to be measured in terms of the amount of recovery achieved.

IMPLEMENTATION OF LEGISLATIVE OBJECTIVES

It is to be expected that there will be three phases of terminations, each with different characteristics. The first phase runs until the defeat of Germany, and results from changes in strategic requirements and in design, leading to over-procurement, labor shortages, etc. Many of these terminations are carried through on a no-cost-to-the-Government basis and do not involve serious disturbances in labor, plant or materials situations.[9] As the

9. Contractors agree to "no-cost" settlements for several reasons, chief of which are: (1) costs not claimed in termination can still be claimed in renegotiation proceedings later (unless renegotiation for that year has already

second phase approaches, the "no-cost" solution will decrease. (See Table I, where this tendency is definitely apparent.) The second phase, beginning with German defeat and ending with Japanese defeat, is expected to result in at least a thirty per cent over-all decrease in the rate of war production and to involve substantial reconversion. Questions of unemployment, idle plants, and bottlenecks to reconversion will then be dominant. With the defeat of Japan, the third and most difficult phase will begin. The intensity of the problem will depend (1) on the time interval between the German and Japanese defeats and (2) the speed in settling and the efficiency in planning terminations during the second phase. In the second phase, it becomes particularly important to determine *which* contract to terminate; in the third phase, *when* to terminate.

To effect a workable theory from the legal standpoint, the "negotiated settlement" principle has been incorporated in War Department contracts[1] since November, 1942. Prior to that time, contracts contained a formula settlement provision. Now, in the event of a breakdown in negotiations, the formula provisions become operative. There are many reasons why the negotiated settlement is favored. It is speedy and eliminates the mass of rules and details involved in a formula settlement. It enables the parties to consider intangible factors, such as the contractor's efficiency and skill, which cannot be adequately handled by for-

taken place); (2) it often is cheaper to agree to "no-cost" settlement than to go through the elaborate proceedings (particularly allocation of costs) of a cost settlement.

1. Three types of Government contracts are used to purchase war *equipment* (distinguished from plant construction, real estate, etc.), namely, fixed price (lump sum), cost plus a fixed fee (CPFF) and letter contracts. The fixed price contract specifies delivery of x units at x unit price for a total price of x dollars. The CPFF contract specifies the delivery of x units at x *estimated* unit price for a total *estimated* price of x dollars, but the contractor is reimbursed for *all actual and allowable costs incurred*, whether they be more or less than the estimated contract price. The fixed fee, however, never changes, unless the work called for is changed (a change in the amount of subcontracting is such a change). The fixed fee is computed as x percentage of the *estimated* total cost. Thus the CPFF contract is legal, although cost plus a percentage of cost (CPCC) contracts of World War I notoriety are illegal under the First War Powers Act, 55 Stat. 839 (1941), 50 U.S.C.A., sec. 611 (App. 1941). The letter contract is a statement that the Government expects to let a contract for x units and authorizes the contractor, pending the completion of a final agreement, to spend up to x dollars in starting work on the contract.

TABLE I
TERMINATIONS OF WAR DEPARTMENT CONTRACTS[1]
(000 omitted in dollar amounts)

	To 12/31/43	1/1/44 to 11/30/44	Total to 11/30/44
Terminations of all contracts			
Number of terminations	15,504	17,576	33,080
Contract price of items cancelled	$9,701,923	$8,824,318	$18,526,241
Number of settlements	11,331	17,706	29,037
Amount settled of contract price of items cancelled	$2,938,649	$7,060,908	$9,999,557
Fixed Price contracts			
Number of terminations	15,286	17,325	32,611
Contract price of items cancelled	$7,737,253	$5,890,608	$13,627,861
Number of settlements	11,252	17,490	28,742
With claims	2,183	6,719	8,902
Without claims	9,069	10,771	19,840
Amount settled of price of items cancelled	$2,867,319	$5,978,592	$8,845,911
With claim	$1,073,859	$4,147,515	$5,221,374
Without claim	$1,293,460	$1,831,077	$3,624,537
Amount of settlements (gross)	$67,331	$323,967	$391,290
CPFF contracts			
Number of terminations	218	251	469
Contract price of items cancelled	$1,974,670	$2,933,710	$4,908,380
Number of settlements	79	216	295
Amount settled of contract price of items cancelled	$71,330	$1,082,315	$1,153,645

	To 12/31/43	1/1/44 to 11/30/44
Fixed price contracts only		
Amount of settlement as per cent of amount claimed	74.8%	86.7%
Cost of property acquired in settlement, as per cent of gross settlement	19.4%	26.4%
Property disposal credits to settlement, as per cent of gross settlement	5.9%	14.2%
Average time of processing claim of *cases settled*: all cases	……	4.8 months
Average time of processing claim of *cases settled*: over $10,000	……	6.3 months

1. As of November 30, 1944, computed from data in Monthly Progress Report, Section 14A, Contract Terminations, Army Service Forces, War Department. Includes War Department contracts only.

mula. The negotiated settlement is final and does not admit of later audit, as is the case with formula settlements.

Prior to August 20, 1943, there were only general and vague directions on terminations in the War Department Procurement Regulations, each particular procurement group of that department working out its own methods. On that date, Procurement Regulation 15, Termination of Contracts for the Convenience of the Government, was issued to unify and explain in greater detail the policies of the War Department. Then came the Contract Settlement Act of 1944, effective July 21, 1944, designed to unify the policies of all Government agencies, whether War, Navy, Treasury or other departments. The negotiated settlement theory of the War Department was largely adopted in this Act. To implement it, the Joint Termination Regulation was issued November 1, 1944, which adopted the provisions of Procurement Regulation 15, in the main. Meanwhile, on October 3, 1944, the Surplus Property Act of 1944 had been passed. To carry the program of negotiations through, the "team" approach has been adopted by paragraph 711.2 of the Joint Termination Regulation. The "team" for the Government, with a contracting officer in charge, is composed of a lawyer, an accountant, a property disposal expert, a negotiator and such other technicians as may be advisable in a particular case. While the matter of mechanics of settling the liabilities under terminated contracts is dealt with in the Contract Settlement Act of 1944 in great detail,[2] this is not true of the Surplus Property Act of 1944, which leaves the implementation of general policies more to the Surplus Property Board created by Section 5(a) of that Act in the Office of War Mobilization.

STATISTICS OF TERMINATIONS

Before undertaking a discussion of objectives, it is necessary to have some idea of what the magnitude of the demobilization program is. The use of statistics, always open to criticism on various grounds, is doubly unreliable in war production matters and more particularly as concerns demobilization, chiefly because the margin of error is so great. The size of the termination problem

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2. The Act is implemented by the Joint Termination Regulation of November 1, 1944, consisting of 284 finely printed pages supplanting War Department Procurement Regulation 15. The Joint Termination Regulation applies to contracts of the Army, Navy, Coast Guard and Marine Corps.

is usually measured in contract price of items cancelled.[3] The estimates of this figure vary from 50 to 150 billions. The variation can be accounted for in several ways. Some estimates are based on the estimated contract price of items cancelled from the *beginning* of cancellations (in 1942) through the end of both wars. Other estimates refer to the period after victory over Germany, others to the period after final victory. The most reliable compilation of statistics is to be found in the Monthly Progress Report, Section 14A, Contract Terminations,[4] and Table I is based on this. The compilation begins with the first "terminations" of the war. Immediate difficulty arises in distinguishing a "termination" from an engineering change,[5] but "paper" terminations present the most puzzling problems. What the contract price of items cancelled is for a particular contract depends on how much uncompleted work there is, and this in turn depends on the arbitrary decision, at the time of placing the contract, whether deliveries in the future shall all be handled in *one* contract or by a series of contracts. This anomaly shows up in the large number and dollar amount of settlements completed on a no-cost-to-the-Government basis.[6] Part of the variation also follows from assump-

3. In statistics such as are gathered in the Monthly Progress Report, Sec. 14A, Contract Terminations, Army Service Forces, War Department, there are many pitfalls. For example, the frequently cited figures for "Contract Price of Items Cancelled" are almost meaningless for any purpose. Such figures include large amounts of "paper" cancellations, e.g. a termination of a one million unit contract after ten thousand units are completed and with work in process on thirty thousand units. Or, as a result of a shift in anticipated date of German defeat from, let us say, November, 1944 to May, 1945, much reordering of terminated items will result in "double counting" of terminations, where new contracts are let rather than rescission of the termination. Any effort to appraise the speed and efficiency with which the mechanics of the termination program are proceeding is best based on a monthly and cumulative arrangement of figures showing the *amount* of contractor's claims and the amount of *settlements* reached. Figures as to the *number* of termination cases opened and closed and as to the number closed at no-cost are not very meaningful for this purpose, as appears in Table I. The Monthly Status Report recognizes this to an extent by individual treatment of the status of major termination cases, although, in this connection, such individual treatment is based on the estimated amount of contract items cancelled, not on the size of the claim filed or estimated size of claim involved. Thus, using the contract price of items cancelled as a test, the Monthly Progress Report for June 30, 1944, states that thirty-five termination cases account for forty-five per cent of the dollar volume of open cases!

4. Published by Headquarters, Army Service Forces, War Department.

5. The difficulty in defining a "termination" is dealt with in my Columbia Law Review article cited above, p. 865, n. 8.

6. Cf. *supra*, n. 9.

tions as to the rate of production and consumption between the present date and the end of the wars and as to the changes in models, etc., that can be expected in the future course of the wars. These considerations suffice to justify extreme caution in the use of termination statistics and estimates.

A more reliable index of the magnitude of the problem is available in estimates of cost of surplus war property that will be on hand at the end of the wars. Where the figures of contract value of items cancelled vary by 50 billion either way from the 100 billion mark, the property estimates vary only 15 billion either way from the 85 billion mark. Aside from the usual difficulty in defining terms (e.g. what is surplus and what is war property), the first point is that surplus war property figures include more than property acquired as a result of "terminations," since they include 15.5 billion in property acquired by the Government (plants, equipment, etc.) and leased to contractors. Thus, either a 50 or a 150 billion estimate of contract value of items cancelled is consistent with an 85 billion estimate of surplus war property. Another point is that both the settlement figures of terminations and the surplus war property figures are underestimates of the size of the problem, since they do not include the value of property retained by the contractor at cost or at a nominal discount. Such property will, of course, be a major factor in postwar demand considerations in many situations.

An even more important index would be employment estimates. Here the dearth of information is particularly acute. Company-wise and industry-wise estimates are available in some cases, but not on an adequate scale.

EFFECT OF PRACTICES ON STATED OBJECTIVES

Practically speaking, the statement of objectives does not disclose the bulk of the actual disposition policy.[7] Government is relying heavily on industry for recommended dispositions. By this technique, each industry tends to work out its own solution. Government can adjust such recommendations, when they cut across "the national interest." "*Enlightened* self-interest of industry" (i.e. a fair approach to the problems, with considerable

7. "Mechanical" defects in the machinery of terminations from the point of view of business administration are discussed in my Journal of Business article cited above. The defects there discussed are clearly the result of a lack of a thorough-going "economics of terminations."

emphasis on long-run effects of the recommended disposition) will in many cases provide a satisfactory solution. Such "enlightened self-interest" considers problems of employment, prospective demand in relation to supply left by war and that to be produced later, and other factors. It is likely, however, to encourage "monopolistic practices," to ignore the effect on public finance of costs which the Government incurs as a result of termination, to run contrary to political objectives in the international field, to ignore cyclical problems (e.g. each industry would undoubtedly seek to readjust itself so as to be at the peak of its own cycle, even though such a readjustment would be disastrous for the industry, due to its lag behind or anticipation of the general business cycle), and not to consider employment matters beyond the interests of the particular industry.

There is a point of view which holds that the termination and surplus war property disposal parts of the readjustment program are overemphasized. It is argued[8] that, with obvious exceptions of certain industries, high percentages of the property in most industries which will accrue to the Government will have only scrap value. War-time experience with percentages of scrap as a result of terminations is, of course, no gauge of postwar situations, since (1) a high percentage of war-time terminations are basically changes in models and (2) current war production has seen a phenomenal growth in the development of "standard parts." It is further argued that a high percentage of "war" contractors have made relatively small changes from their peace-time production, and that of the balance of "war" contractors many segments can only be handled as permanent liquidations or "scalings down." This argument recognizes, however, that questions of disposition of certain Government plants should be treated separately. The Surplus Property Act of 1944 recognizes this distinction in section 19 by providing that disposition of such plants cannot be made until thirty days after submission of a detailed report to Congress.[9]

8. Cf. the views of A. D. H. Kaplan (op. cit.), that only two to two and one-half billion of contractors' inventories will be suitable for the civilian market, and six to seven billion of Government inventories.

9. The plants in this category must be over five million in cost and capable of economic operation as a separate unit but not part of a privately owned plant and must belong to certain industries, e.g., aluminum, magnesium, synthetic rubber, chemicals, aviation, etc.

Industry was the first to realize the problems of readjustment, and the two Acts already referred to achieve its principal objectives: (1) speedy, final and equitable settlement, with adequate interim financing, and (2) prompt plant clearance of Government property. The procurement agencies of the armed forces were, in general, slower in appreciating the problems; their prime emphasis was always on current production. Labor only belatedly sought to cope with the problems, and even at this date matters of separation pay, seniority of employees (with particular reference to returning veterans), postwar unemployment benefits, etc. are not settled. From the over-all Government viewpoint, no separate agency has been set up. Instead, the Production Executive Committee of the War Production Board and the Surplus Property Board assumed the rôle of the "economist of readjustment" late in 1944.

As to the implementation in practice of the announced objectives of termination, it is clear that patchwork exists and particularly that no strong centralized over-all economic planning has been developed.[1] The "enlightened self-interest of industry" is probably the dominant element in current plans and policies on the operational and administrative levels.

1. For evidence on this point, see my Columbia Law Review article cited above, pp. 868ff., section on"Initiation of Terminations," pp. 876ff., sections on "Procurement Regulation 15" and "Joint Termination Regulation," and pp. 887ff., section on "Accounting Problems, Office Reviews and Field Audits." As to the patchwork in the field of CPFF contracts, see my Virginia Law Review article cited above.

The brilliant Baruch Report, which represents the last integration of the economics of terminations, advocated (p. 69) over-all direction, but recommends that no Office of Demobilization be created, in the interest of the prosecution of the war. As of that date such a position was undoubtedly sound, because the primary emphasis continued to be on war production and the establishment of a new agency would cut across all the then existing agencies. However, as the emphasis shifts to demobilization, a new office with a different philosophy is essential. Mobilization can then, conversely, continue as a subsidiary.

How the administrative work that a public servant is doing can become ingrained in his viewpoint is illustrated by the article "The Disposition of Surplus War Property," by J. D. Sumner, cited above. Mr. Sumner was at that time Economic Advisor to the Deputy Administrator for Price in the Office of Price Administration. He lists as one of his five policy objectives in the disposal program: "control of price inflation for so long as a serious inflationary problem exists after the war." Experience with terminations and property disposal shows that the inflation problem is scarcely existent in this area — even during the war, before any downturn in war production comes. The deflationary aspect, on the other hand, is overwhelming at every turn.

The Economics in Action

To speak, theoretically, of the *data* of terminations as constants is, of course, incorrect. For example, the requirements established by the military are undoubtedly influenced by their estimate of costs of various types of equipment. Or policy with regard to releasing men from the services may be influenced by the likelihood of employment for veterans, whereas the economist wants a rate of demobilization of service men from which to plan. This becomes important when the various war controls are released through time and the data which the economist formerly considered as constants for practical purposes now become variables. Such a situation calls for a continual revision of policies in the field resulting from a shift in emphasis on objectives at the plans and policies level.[2]

Assuming that objectives and data have been established, how is the solution of the problem to be attacked? The armed forces having decided what terminations are possible in terms of units of production,[3] the economist is charged with the decision

2. By way of analogy, a simplified statement of dominant objectives in the mobilization program can be suggested:

mid-1941 to mid-1942	plants, facilities and tooling emphasis
mid-1942 to mid-1943	production emphasis
mid-1943 to mid-1944	efficiency and cost emphasis
mid-1944 to mid-1945	dovetailing of production, cutbacks and reconversion

A comparable schema for demobilization would include primary emphasis in the following stages:

1. Dovetailing cutbacks and reconversion with war production, with major emphasis on sustaining war production.
2. Reconversion, elimination of production in Government-owned plants producing the same items as privately owned plants (or vice versa?), elimination of high-cost producers and those requiring the longest time to reconvert to peace-time production.
3. Mass terminations after victory, with retention of certain production with partial value (e.g. stock-pile situations) to insure minimizing unemployment, while retaining some producers over short periods of time to avoid bottlenecks of materials, etc., in reconversion. Holding goods off the market to avoid gluts.
4. Disposition of surplus Government-owned plants after economy has made enough readjustments to avoid major reactions upon operation of these plants.

3. What are terminations under present procedures was referred to in note 5, p. 393 above. Whatever the answer there may be, a termination, for purposes of economics, is involved only if there is a *net* decrease in employment, materials or other factors. Assume that a contract with a company is terminated but another contract is let to replace it, involving comparatively minor changes in the factors of production (e.g. lay-off of labor one month,

as to *what* contract to terminate *when*.[4] During the war these decisions in many cases are easily made. There may be only one contractor producing the particular item, and the prospective dislocation may not be serious if termination occurs at that time. Pro-rata cutbacks over a number of contractors are another frequent solution.

One readjustment measure that is being debated is the stock-piling question. With the development during World War II of an organized system of stock-piling, particularly in metals and other raw materials, postwar stock-piles may be created with a view to future defense preparedness. Such stock-piling would furnish a substantial bond of employment in the readjustment period. This argument is somewhat analogous to the "ever-normal granary" theory of the '30's. It is but a particular aspect of the larger idea of continuing production in certain items beyond the point of present military requirements, where (1) the value of the goods when put on the market will not be too far below the cost of their production, and (2) a glut will not be created. Another particular aspect of this idea occurs in the use of the international market for such purposes — in short, a form of dumping.

An illustration of the application of the marginal principle can be suggested. Where military requirements for the future can be determined with reasonable accuracy, early elimination of some of the producers is advocated, while intensifying production

new tooling, etc.). Such a situation is not a termination for the purposes of economics.

4. The Joint Termination Regulation, paragraphs 230 to 233, sets forth the "economic" factors which must be considered in a termination case:
   1. Comparative costs (232.2)
   2. Whether facilities are useful for other production (232.3)
   3. Financial condition of contractor (232.4)
   4. Terminating in Government-owned vs. privately-owned facilities (232.5)
   5. Location with regard to critical labor areas (232.6)
   6. Contractor performance (deliveries, quality, etc.) (232.7)
   7. Pro-rata terminations (232.8)
   8. Military security (232.9)
   9. Preference for smaller war plants (232.10)
   10. Stage of completion of work (232.11)
   11. Utilization as stand-by facilities (232.12)
   12. Transportation (232.13)
   13. Preference to terminate CPFF rather than fixed price contracts (232.14)

It is clear that certain of these factors are designed for war-time cutbacks, e.g. 4, 5, 7 and 8.

by the producers remaining in operation (by extra shifts, higher speed of operation, etc.), in order to permit readjustment of the eliminated producers. The immediate objection that arises is: who gets back to peace-time production first?[5] Not only is this a difficulty where all the war producers of the same war-time item produce the same peace-time item; it is even true where the peace-time items are different, since there are serious problems of inertia, of acquiring the most efficient labor, etc. Geared to this problem is another that runs throughout the program of readjustment — the familiar economic problem of "name" products. This in turn has suggested the production of "bastard" products without standard name, label, etc. and marketed by all producers of the same type of item. The market reaction to such products (e.g. refrigerators, cars, and other "heavy" consumers' goods) is at best uncertain, and it would not be unreasonable to expect some drying up of demand in anticipation of the return of "name" products to the market. Such drying up would defeat, from the point of view of the economy, the very purpose of the scheme: to keep factors in production.[6]

Another technique that has been seriously advocated is the "tax deduction" termination plan. At present, war producers are permitted to take credit in profit renegotiation proceedings for losses incurred in granting the Government a no-cost-to-the-Government settlement of claims on termination. This suggested granting such deductions for income and excess profits tax purposes. The primary motive of the suggestion has been to sidestep all the "paper" work involved in current termination and property procedures. There are three practical reasons for that motive: lack of consolidation of renegotiation proceedings with termination

5. This objection is not unique to the application of the marginal principle here suggested; it is one of the important problems of readjustment in any event.

6. The disposition of "true" war surpluses, i.e. surpluses due to the exigencies of war and having more than scrap value, is a problem with which economists have had considerable experience during the '30's. The other aspect of the picture, namely, bridging the gap between war production and peace production due to the varying lengths of the period of production for various goods, is the one to which this paper is primarily directed. The problems of World War I centered around the former situation. World War II's problems center more around the latter situation — it is a situation with which our experience is limited. In fact, our best experience in this regard has been the process of mobilization for World War II.

matters; defects in current termination and property procedure; and the muddled condition of certain industries.[7]

Considered, however, as prompted by more serious motives, what are the merits of the tax deduction argument? At the outset, a decision must be made whether the contractor would retain Government property on termination in connection with the tax deduction. Because of a lack of correlation between the value of property on hand at termination and the "loss" the contractor would take, there could be no rule of gratis retention by the contractor. Thus the tax deduction device avoids only the termination part of the problem from the Government's point of view.[8] To meet the situation where contractors, due to an advantageous situation under the capriciousness of the tax laws, would be relatively worse off under the tax deduction plan, the plan would have to be optional.[9] To the economist, the tax deduction plan means the abandonment of any central planning for demobilization. At best there would be industry-wise planning and monopolistic practices. Any effort directed to *partial* governmental planning under such circumstances would probably defeat its objective, inducing more emphasis by industry on monopolistic practices.

The Contributions of Economics

The acuteness of the difference between mobilization and demobilization is illustrated in the existing machinery. Elaborate and comparatively efficient "scheduling units" exist at every point in the war procurement program, whereas there is little scheduling of demobilization. During the war a certain amount of scheduling occurs in the integration of terminations of particular items with new contracts, to keep the same factors in production, but except for the stock-piling theory for certain industries and some pro-rata cutback planning, there is no "scheduling" for demobilization on the part of the Government. It is at this point

7. The matter of muddling, e.g. lack of records and impossibility of reconstructing records, has been dealt with partly in my Journal of Business article cited above. See also H. T. Lewis and C. A. Livesey, Materials Management in the Airframe Industry, 22 Harvard Business Review 477 (1944).

8. Unless some scheme of equalizing the property situation as between various contracts were developed. This would, of course, be filling one hole by digging another.

9. It would also have to be optional because the contractor has his right to settlement under the termination plan specified in his contract.

that the lawyers and other technicians look to the economist. Machinery exists to settle termination cases speedily and equitably, but the problem of over-all scheduling and its handmaid, the over-all theory of property disposal, are beyond the ken of these technicians, in a way that scheduling mobilization was not.[1]

The economist, however, waits upon some political decisions. The rôle of the war-time synthetic rubber and aeronautical industries, for example, in the world postwar economy must first (or simultaneously) be determined. Similarly with Government-owned plants and equipment, in their rôle in the national postwar economy.

Another aspect of the matter (*not* a separate problem) is the property disposal question.[2] Current disposal policy[3] provides for[4] division of disposal responsibility among various Government agencies on the basis of the Standard Commodity Classification List by the agency in charge, the Surplus War Property Administration and its successor, the Surplus Property Board. The dominant notes currently are the prevention of fraud, rechanneling to war production, and immediate cash yield. In the absence of planning as to what contract to terminate when, it is clear that there can be no coördinated planning as to property disposal.

The economist will be of aid in subcontractor problems. The scope of this is indicated in the references cited in note 7, p. 400

1. At the risk of over-simplification, the following is the basis for the difference. In mobilization, the military establishes goals in terms of equipment and manpower, with civilian consumption cut to the extent needed to meet the schedule, and the success of the whole program is measured in terms of meeting that schedule in the most efficient way. In demobilization, the military does not establish the positive schedule. The schedule, despite the best efforts of the military, very suddenly tapers off. The collapse after the current war will be both quantitatively (extent of economy involved) and qualitatively (increased technical nature of war equipment) without parallel in American economic history.

2. Some indication of this problem is given in my Columbia Law Review article cited supra, n. 1, at p. 898, section entitled "Conclusion." These comments, however, are directed to mechanical questions such as the preparation currently of a "catalog" of property expected to be on hand for disposition.

3. War Department property disposal policy is expressed in War Department Procurement Regulation 7 (habitually cited as PR 7 followed by the paragraph number). As usual, the regulations of the War Department in contract matters generally are followed closely by the Navy Department and other procurement agencies.

4. Surplus War Property Administration, Regulation No. 1, May 15, 1944 assigns responsibility for disposal of surplus property among various disposal agencies (such as Reconstruction Finance Corporation, the Treasury Department, the War Food Administration, etc.). The latest list of such assignments is contained in PR 7-904.

above. With the number of tiers of subcontractors running to ten and twelve, and with the number of first-tier subcontractors under a single contract running as high as 3,000,[5] the difficulties can be appreciated. In deciding what contract to terminate when, the subcontractor situation should be considered not alone as regards the mechanical difficulties involved,[6] but also as regards the economic repercussions. To call attention to one point, subcontractors are clearly subject to greater risks than prime contractors who deal directly with the Government; yet nowhere in the Contract Settlement Act of 1944 or any of the regulations is this fact even recognized, to say nothing of establishing a theory and set of principles to deal with the resulting questions of profits of subcontractors.[7]

Another aspect where the advice of economists is important is the integration of renegotiation and termination.[8] At present, with rare exceptions, the two programs are completely divorced. This, of course, results not only in duplication of effort and freak results (both favorable and unfavorable to the contractor), but also produces an added and unnecessary risk factor that must enter into the contractor's economic policy.

Similarly, the current termination regulations are completely silent[9] on recognition of the problem of wholly and partially owned subsidiaries as subcontractors. And many questions of

5. Indeed, on termination of some contracts it has been discovered for the first time that the prime contractor himself was a subcontractor on the same contract at the sixth or seventh tier!

6. At this point, the "company-wide" settlement plan in which all the terminated contracts of a company are lumped together for settlement is the principal suggestion so far. See Carter, Problems Arising Out of Subcontractor Relationship and Maddren, Company Settlements, 10 Law & Contemporary Problems 518 and 529 respectively (1944).

7. Except that the "little" negotiated settlement contract article available to subcontractors establishes the same maximum rate for subcontractors as for primes.

8. On this point see Oates, The Relationship Between Statutory Renegotiation of "Excessive Profits" and the Settlement of Contractual Rights Under Termination Clauses (January 6, 1944), War Department; Parkin, "Development of War Contract Renegotiation and Termination Relationships," 78 Journal of Accountancy, 119 (1944); and "Contract Termination Guide for Prime and Subcontractors," Research Institute Analysis, 33 (June 1, 1944).

9. Except that paragraph 642.3 of Joint Termination Regulation states that a war contractor should not in the case of affiliated subcontractors exercise the power which that paragraph confers to settle claims under $10,000 without approval of the Government.

allocability of costs and of joint costs result from contractwise termination, where one firm is working on a number of contracts. The usual problems would, of course, exist if the contracts ran to completion. Termination adds new problems to the subject.

The theory of profit to be allowed on terminations is another point providing fertile ground for economists. Indefiniteness has characterized this topic to date in the regulations. While the profit is to be "negotiated" by the parties, as the contract states, no guides were available until the following were suggested by paragraph 447 of Procurement Regulation 15 as guides:

1. The extent of work to be done under the contract and how far it had progressed,

2. The difficulty of the work done and that remaining,

3. Special skills and knowledge involved in the work,

4. The extent to which costs incurred involved only the purchase of raw materials or standard parts,

5. The relative importance of subcontracting and what was done in that regard.

Paragraph 553 of the Joint Termination Regulation has now reduced these to three:

1. The amount of profit agreed to at the time the contract was let,

2. The amount of profit that would have been earned, if the contract had been completed,

3. The amount of profit which the contractor agreed to accept in the event of termination.

The paragraph further directs that primary emphasis be given to 1, but recognizes that "any reasonable method may be used to arrive at a fair profit."

It is suggested that the following are additional guides relevant in particular cases:

1. The extent to which "costs" were compromised as a result of the auditor's report and subsequent negotiation,

2. The profit rate allowed generally for similar work in renegotiation proceedings,

3. The contractor's coöperation in settling the case,

4. The profit generally earned (particularly where there are no renegotiation precedents) for similar work.

Under the formula-settlement alternative as set up in the Baruch article of the contract, the formula profit specified is as to

unfinished work (the contractor receiving unit prices for completed work):

1. Two per cent on materials procured but not processed by the contractor, plus

2. Eight per cent on the remainder of allowable costs (except subcontractor amounts),

3. But the total profit not to exceed six per cent on the total of such costs.

With either party able to stalemate negotiations and thus force a formula settlement, it is clear that the formula profit allowance will tend to be the point around which negotiated profits will hover, and almost invariably will be the minimum. Apparently the theory supporting such a "uniform" rate of profit is that risks under different contracts are the same, as far as settlement for the unfinished work goes. Because of this situation, a contractor must, at the time of entering a contract, consider the risk that it will be terminated, as opposed to accepting another contract, and compare the relative profit situations in this light.

Conclusion

While the problems of demobilization offer nothing "new" to the economist in the way of difficulty, it is equally clear that the attention 'so far devoted to the subject of terminations does not bear comparison with its importance. Abundant illustrations of many standard situations in theoretical economics will become available; equally abundant will be those unusual case studies providing source material which could arise only in war time and, in many cases, only in war time under modern conditions. While lawyers, accountants and other technicians have for some time been working on their particular aspects, economists appear to have slighted the matter in favor of larger transitional and post-war problems, perhaps on the ground that the termination problem is a technical question. This paper will have served one of its purposes if it brings to light some of the points of contact which must interest economists in the relation between larger economic considerations and the termination problem. Much of the value of larger planning could easily be undone by a failure to establish an adequate integration between the two.

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SOME FUNDAMENTALS IN LIQUIDITY THEORY

SUMMARY

Preliminary definitions, 405. — Liquidity and the monetary concept, 406. — Liquidity preference, 410. — Definition of money, 411. — The utility of money, 414. — Answers to objections, 414. — The specifications of monetary neutrality, 418. — Three model sequences, 420. — Conclusions for policy, 425.

In this paper I am attempting the formal statement of a theory of economic liquidity in some detail, followed by certain of its applications to problems in monetary analysis. A similar formal structure has been found applicable to the problem of the supply of loan funds.[1]

PRELIMINARY DEFINITIONS

An elementary definition of money on liquidity-preference principles includes many "words of art," in addition to "liquidity" itself. It might run somewhat as follows: a monetary commodity is one whose liquidity is sufficiently high to all individuals in a particular society to justify its use for cash balance purposes, and the society's total money balance is made up of the total amount of these commodities actually held in cash balances. Accordingly, before dealing in greater detail with liquidity, which is the main topic under discussion, it seems desirable to consider certain of the other technical terms which will be used conjointly with it.

To begin with the "cash-balance use": goods devoted to this use, or held in cash balances, are held expressly (consciously) for the purpose of future direct exchange for other goods, which are unspecified in advance. In this definition, the words "expressly," "direct," and "unspecified," should be noted particularly. Ornaments worn as personal decorations do not form part of a cash balance, although their wearer may encounter aborigines on his or her travels with whom they may be exchanged for goods in general; they are not held expressly for exchange. If one holds government bonds, intending to sell them when he decides to buy, say, a house, these bonds also form no part of his cash balance; they must be converted into cash before they can be used to buy

1. Benjamin Higgins, "A Diagrammatic Analysis of the Supply of Loan Funds," Econometrica, Vol. 9 (July–October, 1941), pp. 231–240.

the house (or any other goods). Finally, if one holds an automobile with the intention of trading it in as part payment on a new model, the automobile is also no part of his cash balance; it is held for exchange against a specific type of good, not against goods in general.[2]

The holding of a good for cash balance use by any individual, that is to say, the presence of the good in his cash balance, is a sufficient condition for classifying this good as money to him. And by the same token, the presence of a good in the cash balances of all individuals simultaneously is a sufficient condition for classifying this good as money to all these individuals, and for calling their society a monetary one.

Liquidity and the Monetary Concept

A *sufficient* condition, then, for a commodity being considered monetary is that it has actual cash balance use. Yet, since individuals may consider commodities as monetary without holding them in cash balances, or indeed without holding them at all (witness the status of gold coin and bullion in the United States after 1933), a broader *necessary* condition is involved in the definition of money. It is in the framing of this necessary condition by the use of the general theory of value that the notion of liquidity plays so important a part. Hence it is not surprising to find a "liquidity" definition of money in such a work as Keynes' General Theory of Employment, Interest, and Money,[3] which represents a particularly noteworthy attempt to unify the two bodies of doctrine.

2. Theoretically speaking, there may be not. one but a multitude of cash-balance uses for a particular good, the number depending upon the types of uses to which this good may be put while *simultaneously* being held with a view to direct exchange for other goods.

3. Monetary commodities, according to Keynes (op. cit., pp. 232, 237, 239) are those for which "liquidity preference" exceeds "carrying costs." Precisely how these are made comparable dimensionally is not shown. Indeed, if this definition be accepted without further analysis, money might appear to be non-existent when prospects for profit are so good that liquidity is of no particular advantage, i.e. when liquidity preferences in Keynes' sense are zero or perhaps even negative.

The General Theory may also be cited in support of the next sentence, as regards the ambiguity of the term "liquidity" in ordinary speech. See Max Millikan, "The Liquidity Preference Theory of Interest," American Economic Review, Vol. 38 (June, 1938), p. 248 ff., for an outline and discussion of various definitions implicit and explicit in the discussion of liquidity in the General Theory, stressing the inconsistencies which Millikan believes to exist among them.

Before the term "liquidity" may be used unequivocally, unfortunately, it too demands definition, inasmuch as no precise or unambiguous meaning is immediately apparent. We should consider explicit definitions of liquidity functions and preferences first of all as forewords or prefaces to the definition of money in general economic terms.

The liquidity of commodity a in use x^4 to an individual is the ratio of the final utility to him of the commodity under existing conditions to the final utility which it would have to him in this use if it were perfectly liquid. Rephrasing, it is the marginal rate of substitution between this commodity in this use under existing market conditions and the same commodity in the same use under hypothetical circumstances of perfect liquidity.

By calling a commodity "perfectly liquid" in a given use we mean that it is *absolutely certain* that its holder can obtain for a unit of the commodity[5] at least *one hundred per cent* of its (deflated) money cost to him minus only depreciation compensated for by actual use, measured in terms of general purchasing power,[6] *immediately* upon deciding to dispose of it.

The liquidity function of commodity a in use x, which we represent by $_x\lambda_a$, is dependent, therefore, on three variables. These are: a probability π, a percentage k, and a time period t. The three are themselves interrelated, as will be seen below. Given the values of 1, 100 and 0 for π, k, and t as defining perfect liquidity, our definition may be stated symbolically in terms of the ordinary utility function ϕ and its derivatives:

4. The final utility of a commodity is the same in all uses, so that we may speak of it as single-valued. Its liquidity, on the other hand, may vary widely from one use to another. To cite an obvious example: capital goods held in inventory are in general far more liquid than the same goods after inclusion in a final product.

References to "the liquidity of a commodity" in what follows refer to its liquidity in whatever use this liquidity is highest, unless another interpretation is suggested explicitly.

5. If the market for commodity a is approximately atomistic, the quantity of which an individual or firm may wish to dispose is of no importance. A general formulation must allow, of course, for non-atomistic markets.

6. To set up an index of purchasing power *to an individual*, the most desirable formula seems to me one which makes use of the Fisherine equation, while avoiding the use of index numbers for terms other than P. If we let $\Sigma P_1 Q_1$ represent the individual's income during the "given" period (corresponding roughly to Fisher's MV), and let $\Sigma P_0 Q_1$ represent the same items evaluated at "base" period prices, the resulting value of P is the so-called Paasche index number $(\Sigma P_1 Q_1)/(\Sigma P_0 Q_1)$.

$$_x\lambda_a = \frac{_x\phi_a(\pi,\ k,\ t)}{_x\phi_a(1.00,\ 100,\ 0)} \tag{1}$$

The values of π, k, t in the numerator of (1) are, however, not unique, and neither is $_x\lambda_a$. Any commodity in any use possesses an indefinite number of interrelated values of these terms to each of its consumers. To illustrate: if the commodity a has a regular market, the current market price determines k when t is zero, with a probability (π) of 1.00. It may seem a 90 per cent probability to the holder that he could obtain at least 75 per cent of the cost of a unit of commodity a, as cost was defined above, within a week of his decision to sell this asset ($\pi = .90$, $k = 75$, $t = 7$), while it may seem only a 50 per cent probability that he could obtain an additional 10 per cent by waiting an additional week ($\pi = .50$, $k = 85$, $t = 14$). The particular combination pertinent for this analysis is the one providing optimum liquidity to the holder, maximizing $_x\lambda_a$ subject to the constraints imposed by the external situation as estimated by the particular holder.

Mathematically speaking, maximization subject to restrictions or constraints of this type is dealt with by means of Lagrange multipliers, which will be denoted here by μ. If $_xF_a\ (\pi,k,t)$ signifies the interrelations existing between the independent variables of (1) above, the function to be maximized is no longer ϕ alone but

$$\phi(\pi,\ k,\ t) - _x\mu_a\ _xF_a(\pi,\ k,\ t) - \cdots \equiv \psi(\pi,\ k,\ t)$$

with the number of constraining terms equalling the sum of all uses of all commodities in the system. If we differentiate the newly-defined variable $\psi(\pi,\ k,\ t)$ with specific reference to commodity a in use x, and substitute the result for the ambiguous numerator in (1), the result is:

$$_x\lambda_a = \frac{_x\psi_a(\pi,\ k,\ t)}{_x\phi_a(1.00,\ 100,\ 0)} \tag{2}$$

It is this expression whose maximum value gives the liquidity function of commodity a in use x to the individual under consideration.

This result is illustrated graphically in Figure I for the case of a certainty economy in which π is unity. (The reader may, if he wishes, think of it as fixed at some lower value. Graphical illustration of the general case in a single diagram is obviously difficult, since four dimensions are involved.) In this figure, which is a surface in three-space, the axes are ϕ, k, and t; ψ is measured

along the ϕ scale, as these two variables are of the same dimension. (It should be noted that final rather than total utility is measured along the ϕ axis.) The curve $y-y$ traces the various values of $_x\psi_a$ corresponding to the constant value of π which is assumed. The

FIGURE I

value of the denominator of (2), namely $_x\phi_a(1.00, 100, 0)$ does not lie upon the curve, since it is not subject to the constraint $_xF_a(\pi, k, t)$. The maximum value of $_x\psi_a$ indicates the optimal values of k and t (OK and OT on the diagram), π is fixed by definition, and the numerator of (2) may be read from the (marginal) utility or ϕ scale at $Ou(=PP')$ on the diagram. The numerator is given by the (hypothetical) value OU, corresponding to a k of unity and

a t of zero. The end result, $_x\lambda_a$, is the ratio (Ou/OU), which can be computed from readings on the ϕ axis.[7]

Unless the commodity in question is being held by a bullish speculator awaiting a rise in its price, the ratio Ou/OU, or $_x\lambda_a$, is always less than unity. Certain other characteristics of λ for any commodity at any moment may be listed in terms of its derivatives and their signs. The economic reasons for the directions of the various inequalities should be clear intuitively:

$$\frac{\partial\lambda}{\partial\pi} > 0 \qquad \frac{\partial\lambda}{\partial k} > 0 \qquad \frac{\partial\lambda}{\partial t} < 0$$

$$\frac{\partial\pi}{\partial t} \geq 0 \qquad \frac{\partial\pi}{\partial k} \leq 0 \qquad \frac{\partial k}{\partial t} \geq 0$$

$$\frac{\partial^2\lambda}{\partial k\partial\pi} > 0$$

Several points are to be stressed here:

(1) The concept of liquidity *preference* is more familiar to most readers than is liquidity itself, as a result of its development by the Keynesian school. Here it is treated as a derived concept, and its introduction follows almost automatically. Let a and b be two commodities held by the same individual. Let x be that use of a in which its liquidity is least, and let y be that use of b in which its liquidity is greatest to him. If $_x\lambda_a$ exceeds $_y\lambda_b$, he may be said to have an unequivocal liquidity preference for a over b. Its size may be defined as the quotient of the two liquidity functions in question. If the above condition is not satisfied, by reason of the overlapping of the two sets of liquidity functions for the two commodities, no unequivocal liquidity preference can be said to exist as betweeen them. If at any time all members of an economy have a liquidity preference (as defined above) for a over b, it is natural to ascribe this preference to the economy as a whole.

(2) Both liquidities and liquidity preferences are simple

7. Higgins (op. cit., p. 232) proceeds in a similar manner, treating four dimensions by the use of two diagrams simultaneously (his Figures 1–2). The principal difference between his treatment and this one is his use of the optimum value of k to represent the liquidity of an asset without considering t or π and without considering the importance of the difference between k and unity in the individual's economic reckoning. (In particular, the present definition appears to provide a more meaningful measure of liquidity *preference*.) It should also be noticed that the probabilities used here are the *integrals* of those used by Higgins.

functions of ordinary marginal utilities and substitution rates. Being ratios of numbers having the same dimensions, each is a pure number.

(3) Like other marginal utilities and substitution rates, liquidity functions and preferences are variable from person to person and from moment to moment. (This is a point which may be overlooked in short-run monetary theorizing, which may regard existing patterns as part of the architecture of the economic universe.) The important causes of shifts in liquidity functions and scales of liquidity preference (shifts of, not along, the curves in Figure I) appear to be the following four:

a. Changes in π, k, t external to any actions by the holder of a commodity. (In Figure I, changes in the curve labelled $x-x$, necessarily entailing shifts in $y-y$, or in ψ. Mathematically, changes in the constraints F.)

b. Changes in π, k, t, as individuals acquire or dispose of successive units of commodities in incompletely atomistic markets. (This case is diagrammatically and mathematically identical with the one above.)

c. Changes in the relative weights ascribed a constant π, k, t complex (an unchanged group of constraints F) by an individual. Particularly important in this connection are changes in the significance ascribed to t in the course of rapid price movements or of cyclical price fluctuations. (In the diagram, a shift of this sort would be confined to the $y-y$ curve, the $x-x$ curve remaining unchanged.)

d. Changes in the importance of liquidity as a whole to the individual. This factor also is important in cyclical movements, and may be indicated on the diagram by changes both in the height of OU and in that of the $y-y$ curve. The $x-x$ curve again remains unaffected.

(4) The element of uncertainty, important though it may be, is not the only factor involved in the calculation of liquidities and liquidity preferences. The conditions under which one may have liquidities and liquidity preferences in a certainty economy, to cite the extreme case, will be discussed below.

It now becomes possible to work out the necessary condition for a definition of money in liquidity terms. Let λ_{min} be the lowest liquidity in the cash-balance use of any commodity included in the cash balance of individual A, which is therefore money to A. (We

include clear titles to commodities as equivalent to the commodities themselves. An American silver certificate, for example, is equivalent to a silver dollar.) If, now, any commodity which forms part of the cash balance of another individual B, and which is therefore money to B, has one or more uses to A in which its liquidity is greater than λ_{min}, or would be greater if put to these uses, then this second commodity is money to A, even though A does not include it in his cash balance or hold it at all. Any commodities which satisfy this condition for (nearly) all individuals in a community are monetary commodities, and any economy in which there are one or more commodities whose liquidity is sufficiently high to render them monetary may be called a monetary as distinguished from a barter economy.

For a rigorous separation of monetary from non-monetary commodities to be valid and useful, additional conditions must be satisfied over and above the existence of monetary commodities. (1) Individuals must have identical conceptions of money, which do not change over time. (2) No monetary commodity can have any use other than the cash balance use.

In modern advanced industrial society, condition (2) may be satisfied by non-interest-bearing paper currency, as well as by commercial bank deposits, and such non-interest-bearing paper and deposits actually form the bulk of the money supply. Condition (1), however, is not satisfied even here, due to the changing of legal tender regulations by the government authorities and to the differences of opinion which individuals manifest as regards the liquidity of certain types of obligations — checks, bank notes, and commercial paper — which satisfy the above definition of money to some individuals and not to others, and to more individuals in good times than in bad. (In less "advanced" areas, a third reason may also be included — the distrust of even government paper and commercial bank deposits, despite the high liquidity and cash balance use of these assets in nearby urban centers.

It is interesting to note that in an economy approximating perfect certainty, such as that illustrated by Figure I, the satisfaction of.condition (1) above might become less rather than more likely than otherwise. In such an economy, *all* liquidities would tend to bunch together at values close to unity,[8] and possibilities

8. There are two reasons for a general increase in the numerical size of liquidity functions in a certainty economy, and hence for a clustering of these

for variation between individual rankings might be greater in consequence, though the size of the variations would be smaller.

Simultaneous satisfaction of conditions (1) and (2) above being highly improbable, we must be content with a distinction between monetary and non-monetary assets which is clear logically but which remains subjective and variable over time. The border-line commodities, "money" to some persons and at some times, are the "money substitutes" and "near-moneys" which plague monetary theorists and monetary statisticians alike.

For only if all individuals have identical conceptions of money at a given point in time is it strictly accurate to speak objectively of "the" amount of money existing or circulating in a community, even measured in some arbitrary *numéraire*. (Measurement in physical quantity terms is possible if there is only one monetary commodity, not otherwise.) If individuals' concepts of money are also constant over time, changes in its quantity may be measured accurately by statistical time series. And finally, if only one commodity is money to all individuals over a prolonged period, this series can be expressed in physical as distinguished from value units.[9]

functions at the high end of the liquidity scale. The values of k and t in the numerators of (2) would approach the values of 100 and zero in the denominators. (By definition, the probabilities π are unitary throughout.) Secondly, the subjective importance of any remaining variations between numerators and denominators of (2) would decrease, as individuals would be able to avoid situations in which ready convertibility of assets into cash was of great importance to them. Numerators of (2) would therefore increase, denominators decrease, and quotients approach unity. In the extreme case, in which everyone was perfectly certain of the *same* course of future economic life (which would then become largely telescoped into the present in its price aspects), *all* liquidity funtions and preferences would equal unity. In such a case, the distinction between monetary and non-monetary commodities would break down altogether. This is the sort of phenomenon envisaged by those theorists who allege "incompatibility" between monetary theory and "static economics" — which they define as involving both certainty and stationariness. (See discussion below.)

9. This discussion has not touched upon another equally basic statistical problem in the measurement of the money supply, namely, the determination of conditions under which the expansion of one type of "money" serves effectively to withdraw from circulation some other type or types in an equal or proportionate amount. Here again the writer is inclined to doubt the existence of an objective solution, valid for all individuals and over all phases of a business cycle. For an ambitious and plausible attempt at a solution, see Lauchlin Currie, The Supply and Control of Money in the United States (Cambridge, Mass., 1933), Chap. IV.

The Utility of Money

Inasmuch as the cash balance use provides utility like any other use, goods held in cash balances may be said to possess utility like any others, whether or not they have other uses as well. Since their being held in cash balances renders them monetary, it follows that monetary commodities possess utility to individuals holding them in cash balances. As to monetary commodities not held in cash balances, there is no doubt regarding their utility in whatever uses they may be held, whether it be as jewelry, teeth fillings, wall paper, or what you will. Since all the uses of money involve utility, we may follow the method of the general theory of consumption — interpreting this as the analysis of the division of fixed stocks of commodities among alternative uses — and conclude that money itself possesses utility because it satisfies the demand for liquidity, this conclusion holding regardless of the presence or absence of alternative uses for monetary commodities.

Utility in general, it seems to me, is most usefully conceived as resulting from the services (uses) of goods, not as an attribute of the physical goods themselves. The utility of a good itself, according to this view, is a mathematical abstraction, derivable in a theory of consumption under the condition that the final utilities of the several alternative uses of the good should be equal. (Mathematically, the "final utility of a good" becomes a Lagrange multiplier.) Acceptance of this view leads as a simple special case to the conclusion that the cash balance possesses utility to its holder, resulting from the utility of the cash balance *use* in satisfying the desire for liquidity.[1]

Three major objections have arisen in economic literature to the conclusion expressed here, that money may be said to possess utility in an essentially static economy. Since this conclusion itself seems necessary to the successful integration of the general theories of money and price and to putting both bodies of doctrine "on the same side of the moon,"[2] the objections will be considered in considerable detail. They may be summarized as follows:

1. The issues here, and indeed the issues involved in the entire welter of disputation regarding the utility of money, are not of such character as to be avoided or evaded by the indifference curve-marginal substitution rate technique. The objections to supposing the existence of a utility function involving monetary commodities apply with equal validity or invalidity to the inclusion of a money dimension on an indifference surface.

2. This belief of the writer's pertains to analysis at particular points in time, and need not be interpreted as opposing A. W. Marget's thesis (Theory

(1) We are interested in utility as a determinant of value. The utility of money is dependent upon its value (purchasing power). To speak of the utility of money in the same sense that we speak of the utility of goods consumed directly is to imply a circularity in reasoning. In discussion of value-determination, at least, we should leave the utility of money out of account, writing and speaking as if it did not exist.[3]

(2) The utility of money is not an independent quantity, but is the utility of the things which money buys. Since money is not consumed directly and does not enter physically into a productive process, the economist cannot regard its utility as separate from the utilities of "goods in general."

(3) The utility of money is singularly dependent upon uncertainty. Cash balances would not be held at all, or would be held in infinitesimally small amounts, in a certainty economy. The introduction of uncertainty into an economic system requires the dating of economic quantities, and renders the system "dynamic." Not only the concept of the utility of money, but the concept of liquidity and, indeed, the entire body of monetary theory are therefore

of Prices, Vol. II, New York, 1942, especially Chap. 7) that the "stream equations" involved in the linking of successive time periods in such an integrated system should be concerned with changes in the purchasing power of money over time and not with changes in its final utility.

3. Discussions of the interrelations between value and monetary theory in the German-language literature of the period 1905–20, in particular, stressed this "circularity" argument, as well as the related "inseparability" argument directly below, both of which were propounded by theorists objecting to the application of "Austrian School" utility theory to monetary problems. Writers of the Austrian school attempted to avoid it, usually by a temporal regressus; they sought to prove that the value of money which determined its utility was a past, not a present, value. For a discussion in English see Tjardus Greidanus, The Value of Money (London, 1938). A survey in German is given by Willy Hirsch, Grenznutzentheorie und Geldwerttheorie (Jena, 1928), esp. pp. 114–131. The literature itself is not particularly stimulating, though it includes contributions by writers well known in the English-speaking world. See Marget's comments on the controversy, Theory of Prices, Vol. I (New York, 1938), pp. 443, 450f; ibid., Vol. II, pp. 60f, 88.

The solution given below was anticipated by several writers. Insofar as it relates to postulates of normal price, it is essentially that presented by Ludwig von Mises in 1912 in Theorie des Geldes und der Umlaufsmittel (English translation, The Theory of Money and Credit, New York, 1935, pp. 108–124). Stress on anticipated future prices appears to be a special contribution of the Italian economist Gustavo del Vecchio. Its original presentation is perhaps on p. 133 of "Questioni fondamentali sul valore della moneta," Giornale degli economisti, Vol. 55 (September, 1917); a German version is found in his later Grundlinien der Geldtheorie (Tübingen, 1930), pp. 18f.

dynamic, and stand on an entirely different footing from the pedestrian constructions of "static" theory.[4]

The first of these arguments is valid only against a system in which utility functions include only existing prices as dependent variables. In actual practice, the utility of any commodity, whether monetary or not, is also dependent on a number of other variables, including anticipated prices of various commodities, and including also certain of their prices which may be postulated as "normal." (This view has been supported by demand studies, particularly studies of the demand for durable goods, where the fit of statistical demand curves has been improved substantially when rates of price change are added explicitly to the list of independent variables.) The case of monetary commodities presents no formal difficulties. The prices determining the utility of money are not only the existing prices but also the anticipated and the "normal" prices of goods — as reflected in the anticipated and the "normal," as well as the existing, purchasing power of money. Furthermore, when we compare the utilities of money and of less liquid assests with the same face value and bearing no interest, we can sense the existence of a difference which cannot be ascribed to "value" considerations. The additional factor involved is precisely the greater liquidity of the money.

The second argument above is based upon a principle which I consider fallacious, and upon which some stress has been laid already in this essay. The fallacy: goods, as distinguished from their services, render utility to individuals. If this were true, it would follow that the utility of a good requires its "consumption," in some sense — even if it be only display, as in the case of precious stones — and that money, which is not consumed, but only exchanged for consumables, can not be said to possess it. (If we consider capital goods as being "consumed" in productive processes, the foregoing analysis should not be considered as applying to them as well.) But once the *services* of money be accepted as the

4. Paul N. Rosenstein-Rodan, "The Coördination of the General Theories of Money and Price," Economica (New Series), No. 11 (August, 1936), pp. 279ff, and J. R. Hicks, "Gleichgewicht und Konjunktur," Zeitschrift für Nationalökonomie, Vol. 4 (1932), pp. 446–448, form a veritable "manifesto" of the "dynamicists" in this regard. For a reply to Dr. Hicks, in particular, which does not seem to depart explicitly from his conception of the nature of static conditions, see Marget, "The Monetary Aspects of the Walrasian System," Journal of Political Economy, Vol. 43 (1935), pp. 158–83, and the numerous references to the two articles in both volumes of his Theory of Prices.

basis for its utility, and the "utility of money" as such be treated as a useful mathematical abstraction, it should be clear that its consumption or non-consumption in rendering its services is not a question pertinent to its utility. Its fundamental service, the provision of liquidity or the cash balance use, simply happens to involve exchange rather than consumption.

The third argument, currently in wider favor than the other two, is based upon a highly restrictive definition of the term "static." If a "static" economy be interpreted as one in which existing equilibrium prices and capital equipment are fixed through time, and in which all anticipations are framed on the basis of their being fixed through time, the argument is essentially correct. On the other hand, such stringent restrictions on the static system are not required for the framing of ordinary value or price theory, and there is no compelling reason for their introduction into the monetary field. If only population, tastes, and available technology are treated as constants in static analysis, without these additional restrictions, the argument that monetary theory is limited to the area of "dynamics" freed from such restrictions is invalid, or rather irrelevant. The less severe limitations do not require the elimination of cash balances, and they are still sufficient for the construction of a determinate and rational economics — at least so long as anticipations are assumed rational.[5] (By rational I mean centered about those values for prices and outputs which would have been reached without the active influence of these anticipations, and with small standard deviations about these means. I am excluding the more unjustified, pronounced, and persistent cases of Hicks' "elastic expectations.") In my own thinking, I have found it useful to distinguish between "static" and "stationary" economics, the distinction depending on the presence or ab-

5. The disastrous consequences to any kind of scientific economic thinking if anticipations unrelated to past, present, and probable facts are introduced into analysis and permitted to run "hog wild" are recognized even by the leading advocates of the "economics of anticipations." See Marget, Theory of Prices, Vol. II, esp. p. 229 n., and the references to Lundberg and to Schumpeter therein contained.

It is unfortunate that the few, if striking, cases (chiefly connected with the causes and effects of large-scale hoardings and dishoardings) in which irrational anticipations do affect the actual course of economic events, have prejudiced the layman to so great an extent against the validity of economic forecasting and analysis generally.

sence of the additional postulates which eliminate the holding of cash balances.[6]

The cash balance use may depend upon the existence of uncertainty — except for small amounts held in cash balances for the sake of convenience — or it may not. If all individuals are supposed to be certain of the *same* future course of events, cash balances will certainly be much smaller than can be expected if we ascribe to each individual in a certainty economy a private "pipeline to God," so that the individual certainties may conflict. The diagram (Figure I) illustrates a perfect certainty case in which substantial liquidity preferences are supposed to persist. It can be looked on as realistic only if the various individual certainties fail to coincide.

At any rate, the definition of liquidity proposed here does not depend exclusively upon uncertainty regarding the future course of prices, and the structure built up around it makes the provision of liquidity the principal service of the cash balance and the foundation of the utility of money. The label which we attach to our model — which is devoid of destabilizing or irrational anticipations — makes no difference. This model may be described as "static" or "dynamic," but in either case its stability and rationality determine its significant characteristics, one of which is the holding of monetary commodities in cash balances.

The Specifications of Monetary Neutrality

The case for "neutral money" springs from a fundamental tenet of free enterprise economics, and is not to be confused with "stabilizationism" in any sense. This fundamental tenet may be stated: non-fiscal governmental regulatory activity should not interfere with relative prices, when these are set in competitive markets. Or, as it is stated in J. G. Koopmans' definition of the term "neutrality":

> According to our terminology, money is neutral when, and indeed only when, all preceding occurrences in the money economy correspond to the criterion of a pure exchange economy according to the laws of the equilibrium theories.[7]

6. See M. Bronfenbrenner, "The Rôle of Money in Equilibrium Capital Theory," Econometrica, Vol. 11 (January, 1943), p. 35, n. 2.

7. "Zum Problem des 'Neutralen' Geldes," in F. A. von Hayek (ed.) Beiträge zur Geldtheorie, (Vienna, 1933), p. 18. (We need not accept Koopmans' hypothesis of a "pure exchange economy" arriving at an equilibrium condition sans money and sans *numéraire*.)

In other words, a governmental monetary policy which alters previously determined equilibrium prices is un-neutral. From this point on, it is fairly easy to state what neutral money is not and to point out disadvantages of un-neutrality. The positive case, including a definition of "neutrality" more usable than that of Koopmans, is more difficult. There is some tendency to treat it as identical with a constant Fisherine M or MV (usually per capita),[8] and to consider it desirable particularly for reasons connected with the consequences of innovations. (Though it must be repeated that this desirability is supported indirectly, largely through pointing out alleged flaws in rival standards of monetary policy.) Von Hayek's Prices and Production[9] provides the best-known demonstration that in periods of generally advancing technology, and in an economy characterized by lagging of costs behind prices, "elastic" banking policies lead to profit inflations, even if accompanied by price-level stability. And in his view, profit inflations lead inevitably to depression.

8. The notion of "per capita" is itself far less simple than it appears, since economic units include not only readily denumerable individuals, but also households, partnerships, corporations, public agencies, and the like.

9. (English translation, 2d edition, London, 1935; original German edition, Vienna, 1931.) The pertinent chapters are 2-4 inclusive.

Hayek's argument is developed by following through the effects of expansion of commercial credit to business enterprises. References to the effects of expansion of consumer credit on the income distribution, and through this on relative prices, are omitted, possibly because the price effects follow a pattern which is less predictable. His conclusions can, however, be supplemented, as regards the "un-neutrality" of credit creation, by consideration of the effects of consumer credit expansion, which are somewhat as follows.

If consumer credit is expanded (created), the incomes of those who receive additional means of payment *directly* — we may call them persons of first impact — increase relatively to the incomes of all other groups in the economy. (An exception is the case in which increased incomes enable them to pay debts on which they would have defaulted or postponed payment otherwise. In this case the initial increase in disposable income accrues to the immediate creditors of the persons of first impact.) Incomes of those to whom persons of first impact pay out the increased incomes they have received — persons of second impact, this latter class may be called — also increase relatively to other incomes. Continuing this line of approach, we can follow the diffusion of the increased income over the entire community, finally locating groups (probably, but not necessarily, composed of persons of later impact) whose actual incomes increase not at all, or insufficiently to maintain their relative positions in the income distribution. (As the process of diffusion is followed, particular individuals and firms may be expected to reappear, becoming persons of earlier and later impact simultaneously. Only the earliest impact is considered, in these cases of multiple impacts.)

The utility functions (indifference maps) of persons of early impact,

It is not necessary to rely on such dynamic or historical factors as technological changes and lags in cost in order to discuss problems of monetary neutrality or un-neutrality. The apparatus of liquidity functions and preferences developed above can be used to provide not one but several alternative specifications of neutrality. Insofar as it appears unable to provide a basis for choice between them, this may indicate the inappropriateness of attempting to apply the neutrality concept to practical monetary policy, at least in the former's current stage of development.

To illustrate these points and defend these assertions, let us trace through three cases or model sequences. The first may be conceived of as the one which the proponents of MV-stabilization in the guise of neutrality have in mind. The other two represent equally meaningful (or meaningless) alternatives, arising from changes in basic assumptions. They yield equally meaningful (or meaningless) results. The important point is that the results differ, i.e. that the specifications of monetary neutrality differ with the aspect of un-neutrality on which attention is focussed. The last two models will be treated more summarily than the first one.

(1) An individual is left at the end of an "exchange period" or "market day" with a larger cash balance than usual, due to a superposition of increased money on a constant real total of non-

whose incomes we suppose increased to the greatest extent in the short run, may differ markedly and systematically from the utility functions of persons of later impact, whose incomes we suppose decreased relatively. Suppose a situation where the consumer credit is made up of direct relief payments financed by a governmental budget deficit. The first impact group is composed of poverty-stricken relief clients, the second impact group largely of small retailers in working-class districts, with the "substantial" business elements and banks generally characterized by later impact. In this event, demand curves for products tend to shift in a direction reflecting working-class consumption; and if the payments continue over any length of time, supply curves and relative prices shift with them. The production of goods consumed by early impact (working-class) groups will tend to increase, and probably also their relative prices. The opposite is true for goods characteristically purchased by persons of later impact groups.

The development just outlined cannot be expected to persist indefinitely to the same degree of magnitude after its initial cause has subsided. Residual long-run effects may, however, persist. Ostensibly temporary improvements in the relative income positions of individuals may,like all windfalls, enable them to improve their relative income positions permanently — by permitting waiting for superior employment opportunities or even by permitting advantageous investment. The opposite holds for ostensibly temporary injuries to relative income positions.

monetary resources. In the next "exchange period" or "market day" the effects of the increased cash upon his preferences as between goods will become apparent for the first time. Let us suppose that the two periods are characterized by equilibrium conditions, and that the only differences between them are caused by the cash increment.

In common-sense terms: the more ready cash one has at hand, the less one need worry about the liquidity of his other assets. In terms of our equation (2), the important effect to observe is an increase in the numerators of liquidity functions for commodities regarding which liquidity was previously important; there need be no change, or at most a slight change, in these values for other commodities. The numerators of (2) being of the marginal utility dimension, changes in their relative values (liquidity preferences) will cause a shift in the indifference map of the individual with extra money. This shift will be favorable to commodities of low λ and unfavorable to those of high λ, whether these latter be liquid investment goods or consumption goods purchased with no eye to resale. Investment goods and titles to them — business inventories included — are important in the first category, insofar as their prices are flexible, which makes them relatively illiquid; they are important in the second category, on the other hand, insofar as their prices are inflexible and they are liquid. Shifts in the individual's indifference map, and therefore in his demand, will be toward flexibly-priced and away from inflexibly-priced goods. If a parallel shift in demand occurs for many individuals and firms simultaneously, it will be reflected in changes of the relative prices of flexibly and inflexibly priced investment goods, including inventories.[1] (It makes no difference to this analysis whether the price inflexibilities considered are due to highly elastic supply and/or demand conditions on a competitive market or to price "administration" on an oligopolistic or monopolistic one, except when price administration leads to price rigidity primarily or exclusively against downward pressure.)

For a simultaneous and continuous shift in the cash holdings of any great portion of economic subjects to take place, a change in policy by banking and monetary "authorities," public and

1. We abstract from shifts in consumer demand between superior and inferior commodities, of the type usually stressed under the head of "income effects" in demand analysis, since these shifts do not involve the factor of liquidity.

private, is a prerequisite. If such a change in policy is recognized as under way, further price movements are to be expected. If the authorities' action gives rise to anticipations of general prosperity and fuller employment (supposing an initial condition of under-employment equilibrium), terms in π and k may be expected to rise, and terms in t to fall, particularly in the numerators of liquidity functions for flexibly priced goods. There may also be some fall in the denominators of (2) for these goods, reflecting decreasing general concern with liquidity. We have a bunching of liquidities at the high end of the liquidity scale, the result of which must be increases in the liquidity functions and preferences for flexibly priced goods. These in turn lead to higher marginal utilities for such goods, to increased demand for them, and presumably to increases in their prices. (A complete absence of full-employment "bottlenecks" would conceivably prevent the price increases.) If, on the other hand, the authorities' action is looked upon as primarily inflationary in character, the shifts may not occur in the same manner. (It should be remembered that our k is set up in purchasing-power terms.) The most likely sequence in case of inflationary worries is an increase in the denominators of (2) for all investment goods, the rise reflecting the search for "hedges" against inflation, and a decrease in the numerators of (2) for goods whose rigid money prices do not provide such a hedge, the decline reflecting both a decreased k, defined in purchasing-power terms, and the increased risk involved in what we might call, paradoxically, "purchasing power" illiquidity. Both under circumstances of returning prosperity and under circumstances of advancing inflation, however, flexibly priced investment goods (including inventories, as always) are the expected liquidity-preference and relative-price beneficiaries of a general increase in the quantity of assets held in cash balance form. (The reverse type of movement is to be expected in the event of general cancellation of money and contraction of cash balances.)

This analysis has indicated that alterations in the amounts of money held by individuals, holdings of other assets being kept constant, influence their liquidity preferences for goods. It has suggested how these changes may be reflected in changed demand conditions and a changed pattern of relative prices. It has not provided, however, a method of determining whether these various demand and price effects are due to changes in the *amounts* of

money held — the changes on which attention was concentrated — or upon changes in the *proportion* of monetary to other assets which resulted necessarily from the conditions of the model.

Considering only the changes in amounts of money held as the motive power behind the expected "un-neutral" relative price changes, the conclusion may be drawn that un-neutral price effects can be avoided by monetary authorities who find them undesirable, if they contrive to hold individuals' monetary assets constant over time. Since individuals' monetary assets vary over time with both the quantity and the velocity of circulation of money, the specifications of neutrality indicated by this model reduce to maintaining the constancy of the Fisherian MV.

(2) However, a precisely parallel analysis may be framed by stressing changes in the *proportions* of money held — the changes which were neglected in the initial model. We begin, not with a superposition of cash on a constant total of other assets, but from a proportional substitution of cash for other assets, with the proportion of cash changing and the total of assets constant. (For the sake of simplicity, suppose cash substituted for all assets in the same proportions, and abstract from problems raised by differences in demand elasticities for the various non-monetary commodities.) In this case the relative price effects would be the same as before, and there is no necessity of tracing them through once more. If anything, the effects anticipated would be more marked as a result of cash being substituted for assets and not merely added to them.

The conclusion indicated by this model is that neutrality is violated by changes in the proportion of cash to total assets held; a monetary authority desiring to preserve neutrality should hold this proportion constant.[2]

2. To express this suggested definition in index-number terms, we turn to the "Cambridge" equation of exchange. This equation represents a situation at a point of time, rather than over a period as does the Fisherian one; it applies, in the felicitous terminology of Robertson, to "money sitting," not "money on the wing":

$$P = \frac{KR}{M}$$

Here P is the level of prices, M the quantity of money, R the total of assets held, evaluated at base-period prices (sometimes known as "real balances" but including monetary assets), and K is the proportion of R held in cash balances. The equation itself may be written with K on the left:

$$K = \frac{M}{PR}$$

This case should not be laid aside without pointing out that the constancy of M, sometimes specified as constituting neutrality, is shown by it to be un-neutral whenever real balances vary.

(3) The third case to be considered is in some ways particularly instructive. It combines the other two. Assume that individuals' holdings of cash and of all other assets are increased (or decreased) in the same proportion. Even if we ignore complications raised by the varying elasticities of demand for goods — even going so far as to suppose that goods vary among themselves in liquidity alone — a pattern of relative-price changes similar to those in the other two cases would occur. Changed cash balances and incomes would themselves change the importance of the liquidity factor. If this is not intuitively obvious, remember that in the actual world increases in real income above a minimum level are associated in normal times with decreases in the proportion of assets held in cash balances. An increase in real income which keeps the proportion of monetary assets unchanged would be expected, therefore, to decrease the importance of liquidity, as in the other two models discussed.

If even proportional variations in money and other assets produce relative-price changes, and are therefore un-neutral, the only definition of neutrality which is indicated by this model is a trivial one — if neither incomes nor cash balances change, then money is neutral.

Reflection on this model should serve a useful purpose in the emphasis of a point which, when it has once been noted, seems to follow from the most elementary concept of a structure of liquidity preferences. If changes in the relative prices of goods, none of which are monetary, arise from changes in the degree to which they fall short of "moneyness," there is no legitimate basis for determining whether relative price changes are "due to money" or "due to goods," because of the intimacy of the connection between the two. (By extension, the same application of liquidity analysis can be made to price-level changes, insofar as they include

A policy of holding K constant involves allowing P to vary directly with M and inversely with R, or, which is the same thing in practice, varying M directly with the product PR. (This product, over time, is the equivalent of the Fisherian MV, so that variation of M directly with MV would amount to holding V constant.)

I do not propose to defend this formula or its implications, or for that matter the definition of neutrality on which it is based, as an acceptable guide to monetary policy.

relative price changes, i.e. insofar as all prices fail to move in the same direction and by the same proportionate amount.) This means that there is no a posteriori test of the effectiveness of a policy of monetary neutrality which is applicable outside of the conceptual and shadowy realms of ceteris paribus, for such a test would require a procedure for distinguishing sharply between relative-price changes ascribable to money and those ascribable to goods in a world where relative prices are constantly changing.

The important conclusion for policy which results from considering these three cases is that liquidity theory possesses a singular potency in detecting the presence of un-neutrality, but no similar potency in determining its cause and cure. Un-neutrality may be due to the changing absolute sizes of cash balances, to their changing proportions of total assets, or to some more or less complex function of the two.[3] In a case more realistic than our models, when the size, character, and liquidity of non-monetary holdings is changing quite apart from monetary factors — as, for example, as a consequence of technological advances — there is no method even of separating the relative-price effects of the non-monetary developments from those of the monetary developments, in advance of their occurrence. As to their allocation after occurrence, first between monetary and non-monetary causes, and second — limiting attention to the monetary category — between absolute and proportional changes in cash holdings, this involves problems unsolved as yet in a posteriori probability theory.

It has been shown that entirely different criteria for policy, drawn up in index-number terms, would result from applying different definitions or specifications of neutrality, once neutrality

3. My personal view, with no basis other than crude introspection, is that a first approximation to a "barometer" of neutrality might be provided by some linear function in money and total assets, with the constant term positive. It seems possible to suppose that, insulated from all other causes of change, monetary policy might hold relative prices fixed by maintaining this functional relationship between money and incomes, or money and assets. But there is no reason to suppose that the parameters of this function would remain constant over time, or that they could be determined statistically.

The argument back of the initial (hopeful) part of this conclusion is that one's desired cash balance (encaisse désirée, in the Walrasian system) is determined, above a certain positive minimum, by one's gross liabilities, which are themselves very roughly proportional to gross assets. At any rate, it seems plausible to agree that cash holdings affect liquidity preferences, and thus indirectly demand functions and relative prices, both in consequence of their absolute and of their relative sizes.

were accepted as the final goal of manipulation. This was shown by comparing two cases only, the specification involving holding average cash balances constant and that involving holding their proportion to total assets constant. As to the intermediate or combinatorial possibilities suggested in the last footnote, their results are legion, and may well be unmanageable in the extreme degree, especially if, as I suspect, the ideal "function" defining neutrality may actually be a functional whose parameters vary widely over time.

In short, liquidity analysis of the type presented here yields no more acceptable a set of specifications for monetary neutrality than does the less formal literary discussion. In particular, advocates of constant per capita M or MV as bases for monetary policy cannot use liquidity theory (any more than any other type of analysis) to show that the plan they advocate would actually hold relative prices aloof from monetary influences in the real world. They must rely on other, perhaps less "academic," bases for their practical conclusions.[4]

<div align="right">M. Bronfenbrenner.</div>

United States Navy

4. This paper represents the writer's views alone, and does not necessarily reflect those of the Navy Department or of other naval personnel.

ESTIMATED COST
OF OLD-AGE AND SURVIVORS INSURANCE[1]

SUMMARY

Introduction: scope and plan, 427. — I. Cost estimates for the present old-age and survivors insurance program without change: provisions of the program, 429; the high and low assumptions, 430; the estimates, 431. — II. Cost estimates for the old-age and survivors insurance program with assumed changes: the changes considered, 436; change in lump-sum benefit payments, 437; in benefit payments to parents, 438; in minimum monthly benefit limitation, 439; in maximum monthly benefit limitation, 440; in age of eligibility for women, 442; provision of disability benefits, 442; extension of coverage, 443. — Summary of estimates, 450. — Conclusion, 450.

INTRODUCTION

Many responsible persons have come to accept the principle of public insurance and to advocate its application to a greater degree as a means of providing a "floor of protection" to the individual worker and his family against loss of income (or expense) as a result of old age, death, invalidity, accident, sickness, maternity, and unemployment. However, some leaders are inclined to center attention upon the social desirability of such a program while giving little or no thought to the ultimate financial and economic consequences. It is the belief of the author that consideration given now to the financial aspects of any contemplated public insurance program should lead to the exercise of greater wisdom in its development and in the management of the fiscal affairs of the government.

The only part of a comprehensive public insurance program on which it is possible to make a moderately well-substantiated cost study is Old-Age Insurance. Besides, largely because of the expected increase in the proportion of the aged in our population, this part of the program will give rise to mounting expenditures in benefit payments years hence. It is for these reasons that the Federal Old-Age and Survivors Insurance program was selected

1. Abridged and revised version of a study, entitled "Estimated Ultimate Cost of the Federal Old-Age and Survivors Insurance," made by the author during the summer of 1944 for the Research Council for Economic Security. Those interested in more detailed information than is given herein should write either the author or the Research Council for Economic Security, 176 West Adams Street, Chicago 3, Ill.

for study. More specifically, the purpose of the study is to help answer the questions now being raised by financial-minded persons in regard to this program: "What will it cost?"

As the reader no doubt is well aware, several other studies have been made of the Old-Age and Survivors Insurance program. The most important of the recent studies along this line are those made by Dorrance C. Bronson, Associate Actuary of the Office of the Actuary of the Social Security Board, published under the title, "Old-Age and Survivors Insurance 1943–1944 Cost Studies." Actuarial Study No. 19 of this series of studies by Bronson was in part recast for the Fourth Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance Trust Fund, 1944. Both Actuarial Study No. 19 and the Fourth Annual Trustees Report, as well as other publications of the Social Security Board, have been utilized by the author in the making of this study. In addition he has had the encouragement, the general cost estimates, and the facilities of Gerhard Hirschfeld, Director of the Research Council for Economic Security. Besides, the estimated range of annual expenditures of the Old-Age and Survivors Insurance program of the National Planning Association, as published in the "Joint Statement on Social Security," were in his possession. With these antecedents the study was undertaken with a view to presenting an itemized break-down of the ultimate cost of the Old-Age and Survivors Insurance program, in as nontechnical a manner as seemed justifiable to serve as a basis for broader public understanding of this program to which the country has been (or may be) committed.

Lack of access to essential records of the Social Security Board, as well as lack of time and space, have limited the extent and the intensity of the study. The years 1955, 1980 and 2000 were selected as significant for setting forth the cost of the program. More detailed basic information was available for these than for other years. Furthermore, they were found to be good years for the study because they were remote enough from the present to be removed from the abnormal influences of the war and to allow certain maturity features of the program to become evident. However, since the number of beneficiaries for old-age benefits is expected to increase from year to year, even beyond the year 2000, cost estimates for the last year of the study, 2000, are not to be taken as the maximum. The period of the study, beginning in

1955 and ending in 2000, is believed to be sufficient to set forth the significance of the mounting expenditures under the program.

The result of the study is presented in two parts. The first part presents cost estimates of the present Old-Age and Survivors Insurance piogram without change for the selected years. The second part presents cost estimates of the Old-Age and Survivors Insurance program with certain assumed changes for the same selected years.

I. Cost Estimates for the Present Old-Age and Survivors Insurance Program Without Change

The present Old-Age and Survivors Insurance program offers protection on a family-unit basis against the contingencies of old age and of death. Thus it may be thought of as consisting of two divisions: (1) Old-Age Insurance; and (2) Survivors Insurance. At the start, under the Social Security Act of 1935, the program was simply Old-Age Insurance on an individual basis. By an amendment to the Social Security Act in 1939, this division was changed to a family-unit basis, and the other division, Survivors Insurance, was added, it being also put on a family-unit basis.

Under the Old-Age Insurance division, on retirement after sixty-five, the insured person is entitled to a monthly benefit; and in case he has a family, supplementary monthly payments are made to his wife, age sixty-five or over, and to each unmarried dependent child under eighteen years of age (or if he should die these same beneficiaries continue to receive monthly benefits). Then, under the Survivors Insurance division, on the death of the insured person, prior to retirement after sixty-five, monthly benefits are made available to a young widow with children and to each unmarried dependent child under eighteen years of age (or to his unmarried widow, when she becomes sixty-five or over). If there is no widow or children entitled to monthly benefits, a dependent mother or father, or both, become eligible for such a benefit. Finally, in case any insured person dies leaving no survivors eligible for monthly benefits, a lump-sum death benefit is paid to his widow (or widower, if the insured is a female), child, or parent, or if no such relative survives, to a person equitably entitled to such benefit.

All benefit payments are based on the insured's average monthly wage earned in covered employment, ordinarily con-

sidered as including industry, commerce, and finance, and as excluding railroads, agriculture, domestic service, government and other minor employments, as well as self-employment. The insured's primary monthly benefit is determined according to a complex formula based upon his average monthly wage and years in covered employment. Supplementary and survivors benefits are based upon the insured's primary monthly benefit earned either at death or retirement. A wife, a child, or a parent entitled to a monthly benefit is to receive one-half; a widow entitled to a monthly benefit is to receive three-fourths; and a survivor entitled to a lump-sum benefit is to receive six times the insured's primary monthly benefit.

Whenever any insured's primary monthly benefit amounts to less than $10 a month, such benefit is increased to $10 as a minimum. Whenever the total benefit payments with respect to the wages of an insured person exceed the limit of $85 a month, a monthly amount equal to twice the primary monthly benefit, or eighty per cent of the insured's average monthly wage, whichever is least, such total benefits are to be reduced to such limit, each benefit except the primary benefit being proportionately decreased. No monthly benefit is paid to an insured person or any of his beneficiaries while $15 or more of wages is received in covered employment.

There are certain basic factors to which consideration was given in analyzing the cost of the Old-Age and Survivors Insurance program. These factors are: (1) population patterns; (2) wage levels in covered employments; (3) years of creditable employment in order to attain and maintain insured status, a necessary qualification for the receiving of benefits; (4) family composition; (5) remarriage of widowed beneficiaries; (6) employment of beneficiaries in covered employment.

The most important of these factors is that of population patterns, as affected by birth, death, immigration, and emigration. To get the range in cost due to this factor, two well-known population forecasts were adopted. The population estimate of the Committee of Economic Security, brought out in 1935, which assumes little improvement in mortality, was selected as a basis for the low cost assumption. The National Resources Committee medium population estimate, made public in 1938, which assumes some improvement in mortality, was selected as a basis for the high

cost assumption. Both assumptions, the high more than the low, indicate that for the selected years of the study there will be considerable increase in the proportion of the aged groups of the population and, in turn, of recipients entitled to benefits under the Old-Age and Survivors Insurance program.

The next most important factor for which low and high assumptions were made was that of wage levels in covered employment. Level annual wage units, remaining constant for each of the selected years, were first assumed, the high assumption being fixed to correspond to the present war wage level, and the low assumption so as to be somewhat below it. These wage units were then progressively increased at the rate of one per cent per year, starting with the year 1945, to put the level wage units upon an increasing wage basis. These wage assumptions are the same as those made by Bronson in Actuarial Study No. 19 and Actuarial Study No. 19(*a*).[2] It must be remembered, however, that the progressive increase in wage units of one per cent per year results in quantitatively smaller additions to benefit payments. This is due to the fact that benefits are paid upon a weighted composite of wages spread over a long period of years, that the $3000 annual wage ceiling holds down the increasing benefits, and that the benefit formula now operative tends to reduce the effects of rising wages.

Admittedly, it is possible that other (variable) factors may exercise an influence to some extent upon the cost estimates herein undertaken. Such factors are: (1) the lengthening of the period of childhood (or preparation); (2) earlier age of retirement; (3) long-time trend of migration out of agricultural and domestic service; (4) downward trend in hours of work; (5) upward trend in the employment of women outside of the home. No attempt is made, however, in this study to evaluate these possible, if not probable, changes. They are excluded as factors in making the estimates of costs under the Old-Age and Survivors Insurance program.

Tables I and II show, by classes of beneficiaries, the costs of benefits in dollars of outlay and as a per cent of covered payrolls. Table I gives the figures in terms of level wages, Table II in terms of increasing wages. The influence of the increasing proportion of aged beneficiaries is quite evident in the old-age monthly benefits.

2. Dorrance C. Bronson, Old-Age and Survivors Insurance 1943–44 Cost Studies, pp. 11 and 17.

TABLE I(a) LEVEL WAGE

OASI PROGRAM SHOWING COSTS OF BENEFITS IN DOLLARS AND AS A PER CENT OF COVERED PAYROLL CLASSIFIED AS TO TYPE OF BENEFICIARIES FOR 1955 AND 1980

(Low and High Assumption)

(Amounts in Millions of Dollars)

CLASS OF PAYMENTS	1955 Low		1955 High		1980 Low		1980 High	
	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. MONTHLY OLD-AGE BENEFITS	$587	1.65	$855	1.56	$2,156	5.99	$3,525	6.18
1. Primary	412	1.16	610	1.11	1,353	3.76	2,225	4.08
(a) Male	362	1.02	543	.99	1,107	3.08	1,937	3.40
(b) Female¹	50	.14	67	.12	246	.68	388	.68
2. Wives²	58	.16	93	.17	180	.50	370	.65
3. Widows²	104	.29	126	.23	602	1.67	775	1.36
4. Parents	13	.04	26	.05	21	.06	55	.10
B. MONTHLY YOUNG SURVIVORS BENEFIT	266	.75	272	.50	388	1.08	336	.59
1. Children³	193	.54	206	.38	284	.79	258	.45
2. Widows Current	73	.21	66	.12	104	.29	78	.14
C. LUMP-SUM BENEFIT	40	.11	44	.08	81	.22	97	.17
Total Benefits	$893	2.51	$1,171	2.14	$2,625	7.29	$3,958	6.94

1. These eligible for primary benefits only; in addition to single and divorced women, this column includes a few wives whose husbands have not yet retired and insured wives and widows of non-insured husbands.

2. Includes women who are also insured in their own right.

3. Includes the relatively few children of primary beneficiaries.

Source: Dorrance C. Bronson, Old-Age and Survivors Insurance, 1943–44 Cost Studies. Actuarial Study No. 19 (level wage), September, 1943, Table III, p. 14.

TABLE I(*b*) LEVEL WAGE

OASI Program Showing Costs of Benefits in Dollars and as a Per Cent of Covered Payroll Classified as to Type of Beneficiaries for the Year 2000

(Low and High Assumption)

(Amounts in Millions of Dollars)

	Low		High	
Classes of Payments	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. Monthly Old-Age Benefits.	$2,750	7.65	$5,593	9.82
1. Primary	$1,653	4.60	$3,596	6.31
(*a*) Male.	1,363	3.79	2,935	5.15
(*b*) Female	290	.81	661	1.16
2. Wives	221	.61	598	1.05
3. Widows.	859	2.39	1,348	2.37
4. Parents	17	.05	51	.09
B. Monthly Young Survivors Benefits . . .	$389	1.08	$345	.61
1. Children	$285	.79	$267	.47
2. Widows Current	104	.29	78	.14
C. Lump Sum Benefit .	$93	.26	$128	.23
Total Benefits .	$3,232	8.99	$6,066	10.66

1 Those eligible for primary benefits only; in addition to single and divorced women this column includes a few wives whose husbands have not yet retired and insured wives and widows of non-insured husbands

2. Includes women who are also insured in their own right

3 Includes the relatively few children of primary beneficiaries

Source: Dorrance C. Bronson· Old-Age and Survivors Insurance 1943-44 Cost Studies Actuarial Study No. 19 (level wage) September, 1943, Table III, p. 14.

Though dampened, this group of payments does not appear to level off within the period of the study, while the payments to young beneficiaries show a tendency to stabilize after 1960. Under both the low and the high assumptions, beginning in 1980, payments to aged widows rise markedly, because these widows result from the death of insured husbands at all ages of married life. A large number were once widow current beneficiaries who again come in for benefits at the age of sixty-five. It should be understood in interpreting the figures in the table that the low assumption is not meant to represent the lowest, nor the high assumption, the highest. For example, in 1980 the figure for benefit payments to young mothers with children (widows current)

TABLE II(a) INCREASING WAGE

OASI PROGRAM SHOWING COSTS OF BENEFITS IN DOLLARS AND AS A PER CENT OF COVERED PAYROLL CLASSIFIED AS TO TYPE OF BENEFICIARIES FOR 1955 AND 1980

(Low and High Assumption)

(Amounts in Millions of Dollars)

CLASS OF PAYMENTS	1955 Low Amount	1955 Low Per Cent of Payroll	1955 High Amount	1955 High Per Cent of Payroll	1980 Low Amount	1980 Low Per Cent of Payroll	1980 High Amount	1980 High Per Cent of Payroll
A. MONTHLY OLD-AGE BENEFITS	$591	1.52	$862	1.46	$2,231	4.63	$3,642	5.03
1. Primary...............	415	1.07	615	1.04	1,407	2.92	2,410	3.33
(a) Male................	365	.94	548	.93	1,147	2.38	2,007	2.77
(b) Female[1]............	50	.13	67	.11	260	.54	403	.56
2. Wives[2]................	58	.15	94	.16	186	.39	383	.53
3. Widows[2]...............	105	.27	127	.22	615	1.28	791	1.09
4. Parents................	13	.03	26	.04	23	.05	58	.08
B. MONTHLY YOUNG SURVIVORS BENEFIT ...	269	.69	275	.47	417	.87	357	.49
1. Children[3]	195	.50	208	.35	305	.63	274	.38
2. Widows Current	74	.19	67	.11	112	.23	83	.11
C. LUMP-SUM BENEFIT..............	40	.10	44	.07	86	.18	102	.14
Total Benefits	$900	2.31	$1,181	2.00	$2,734	5.68	$4,101	5.66

1. Those eligible for primary benefits only; in addition to single and divorced women, this column includes a few wives whose husbands have not yet retired and insured wives and widows of non-insured husbands.

2. Includes women who are also insured in their own right.

3. Includes the relatively few children of primary beneficiaries.

Source: Dorrance C. Bronson, Old-Age and Survivors Insurance, 1943–44 Cost Studies. Actuarial Study No. 19 (increasing), May, 1944. Table D, p. 28.

TABLE II(b) INCREASING WAGE

OASI Program Showing Costs of Benefits in Dollars and as a Per Cent of Covered Payroll Classified as to Type of Beneficiaries for the Year 2000

(Low and High Assumption)

(Amount in Millions of Dollars)

Classes of Payments	Low		High	
	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. MONTHLY OLD-AGE BENEFITS.	$2,990	5.38	$6,025	7.49
1. Primary	$1,825	3.28	$3,907	4.86
a. Male......	1,486	2.67	3,170	3.94
b. Female........	339	.61	737	.92
2. Wives..............	241	.43	646	.80
3. Widows...	905	1.63	1,415	1.76
4. Parents......... ...	19	.03	57	.07
B. MONTHLY YOUNG SURVIVORS BENEFIT .	$445	.80	$385	.48
1. Children	$326	.59	$298	.37
2. Widows Current......	119	.21	87	.11
C. LUMP SUM BENEFITS . .	$104	.19	$140	.17
Total Benefits . .	$3,539	6.36	$6,550	8.14

1. Those eligible for primary benefits only; in addition to single and divorced women this column includes a few wives whose husbands have not yet retired and insured wives and widows of non-insured husbands

2. Includes women who are also insured in their own right

Source: Dorrance C Bronson: Old-Age and Survivors Insurance, 1943-44 Cost Studies. Actuarial Study No 19 (level wage) September, 1943, Table B, p. 28.

under the high assumption is lower than that for the low assumption, because the assumption with regard to population overbalances the assumption with regard to wage levels. It will also be seen that while the dollar benefit outlay in the high assumption runs above that of the low assumption, the benefit costs as a percentage of the payroll does not consistently bear the same relationship. A general comparison of the cost figures on increasing wages as compared with level wages will show a higher dollar cost and a lower per cent cost for the former than for the latter. This is due, of course, to basic differences in covered payrolls.

On the one hand, the figures shown in Tables I and II are high as compared with the estimated cost of benefit payments for the present year, 1945. For example, the low and the high

figures on a level-wage basis for 1955, ten years hence, are nearly five times as high in dollars and three and one-half times as high in per cent of covered payroll. However, the estimated cost for 1945 is made low to allow for the unusually large amount of suspension of benefit payments due to war-time employment of beneficiaries. On the other hand, the figures shown in Tables I and II are low as compared with the estimated cost of benefit payments for the year 2000. For example, the estimated cost on a level-wage basis for the year 2000 for the low assumption is 23 per cent greater, and for the high assumption a little over 40 per cent greater, in both dollars and percent of payroll, than the figures in Table I(a) for 1980.   .

II. Cost Estimates for the Old-Age and Survivors Insurance Program with Assumed Changes

During the presidential campaign last summer, both major political parties made commitments to change the Social Security program. Recently the Chairman of the Social Security Board, in a Congressional hearing on the freezing of the Old-Age and Survivors Insurance payroll tax, announced that early in 1945 the administration would present to Congress a new Social Security program, similar in principle, but different in detail, to the now well-known Wagner-Murray-Dingell Bill. Still more recently, the President, in signing the measure to freeze the payroll tax passed by Congress by an overwhelming majority vote, declared that very soon a new comprehensive plan to enlarge and improve the Social Security program would be made public.

Just what changes, if any, Congress is likely to make in the Old-Age and Survivors Insurance part of the Social Security program cannot be assumed. However, in order to get some idea of the ultimate cost of an enlarged and improved Old-Age and Survivors Insurance program, certain proposed changes which have been more or less widely discussed are assumed in this study. One change which has been more commonly mentioned is that of the extension of coverage to employments not now covered. This one change gives rise to more complications in the making of adjustments in cost estimates than any of the other changes which have been proposed. It will be considered later in some detail.

These changes to which consideration is first given are as follows:

(1) Payment of the lump-sum benefit on death of the insured, even though there are survivors entitled to monthly benefits.

(2) Increase in benefit payment to a parent from one-half to three-fourths of the basic primary monthly benefit of the deceased insured.

(3) Increase in the minimum monthly benefit limitations from $10 to $20.

(4) Increase in the maximum monthly benefit limitations from $85 to $120, and removal of the two hundred per cent of the basic primary monthly benefit as a maximum.

(5) Decrease in the age of eligibility for women beneficiaries from the age of sixty-five to sixty.

(6) Provision for total and permanent disability benefits.

No consideration is given to proposed changes in method of determining the average monthly wage and in the benefit formula for arriving at the primary monthly benefit. These exclusions were due partly to lack of time but mostly to doubt in regard to such changes.

Estimates of the cost of the assumed changes were tied to the cost estimates for the present program without change, as given in Part I. Thus, the basic assumptions as to population, wages, and the like, as stated in Part I, become also those for Part II. Separate or joint consideration was given to the assumed changes as conditions seemed to warrant.

Change in Lump-Sum Benefit Payments

Under the present Old-Age and Survivors Insurance program, no lump-sum benefits are paid, if there are survivors entitled to monthly benefits. The assumed change would make a lump-sum benefit six times the basic primary monthly benefit of a deceased insured payable, regardless of whether or not there are survivors entitled to monthly benefits. In making an estimate of the cost of the change, it was necessary to compute for the selected years: (1) the average primary monthly benefit on which survivors monthly benefits are based, and (2) the number of deceased insured persons represented in survivors monthly benefit payments.

The average primary monthly benefit on which survivors monthly benefits are based was computed from the estimated

number of survivors beneficiaries in force and ' the estimated amount of payments in force to this group, derived from the estimated average annual benefits in force per beneficiary, as given by Bronson in Actuarial Study No. 19.[3] The result was, in turn, multiplied by six to get the average lump-sum death benefit. The amount thus computed was somewhat higher than the estimated lump-sum benefit per beneficiary payable when there are no survivors entitled to monthly benefits. This was to be expected because of differences in covered wages and years of employment of deceased insured in the one as compared with the other case.

The number of deceased insured persons represented in survivors monthly benefit payments was not so easily determined. To begin with, it was found that the lump-sum awards for the year 1941 approximated 65 per cent of the total death claim awards.[4] This percentage was taken as a starting point for establishing similar, but somewhat lower, ratios for the selected years. With such ratios applied to the estimated number of lump-sum beneficiaries in force for the selected years, the figures for the number of deceased persons represented in survivors monthly benefits were derived. The result was tested by computing, from the Commissioners 1941 Ordinary and Industrial Mortality Tables, average annual percentages of the number of deaths to the number living for similar age-groups as those of insured persons involved. It is believed that the derived figures for deceased insured persons represented in survivors monthly benefit payments for the selected years are about right.

By multiplying the estimated average lump-sum benefit per beneficiary by the estimated number of deceased insured persons represented in survivors monthly benefits, the estimated aggregate cost of the assumed lump-sum benefit change was determined (minor adjustments for suspension of payments etc., being made).

Change in Benefit Payments to Parents

Under the Old-Age and Survivors Insurance program as it now stands, if there is no widow or child entitled to a monthly benefit, a dependent mother, father, or both become eligible for a monthly benefit equal to one-half of the basic primary monthly benefit of the deceased insured. The assumed change would

3. Bronson, op. cit., Table 11, p. 13.
4. Social Security Bulletin, May 1944, Table 6, p. 16.

increase the monthly benefit to a parent from one-half to three-fourths of the primary monthly benefit of the deceased insured upon which it is based. The estimated aggregate cost of this assumed change was derived, like that for the assumed lump-sum benefit change, from the estimated number of parent beneficiaries and the estimated average primary monthly benefit basic to their monthly payment (no adjustment in this case being made for suspensions of payments). The following formula was used: the number of parent beneficiaries times one-fourth of the average primary monthly benefit times twelve (to put on a yearly basis).

Change in the Minimum Monthly Benefit Limitation

Under the present Old-Age and Survivors Insurance program, the statutory minimum monthly benefit based upon the creditable wage record in covered employment of an individual deceased or retired insured person is fixed at $10 for a single beneficiary, at $15 for a retired person and his wife, $12.50 for a young widow and one child, $17.50 for a young widow and two children, and $20 for a young widow and three or more children. For the same family groups of beneficiaries the assumed change would raise the limitations to $20, $30, $25, $35, and $40 respectively.

While experience, because of its brevity, cannot be relied upon in making estimates of the cost of this assumed change, what is known cannot be ignored. In 1940 one-third of the monthly payments within the size distribution of $10 14.99 were exactly at $10.[b] This means that those receiving these payments would have received lower amounts if it had not been for the statutory minimums. Furthermore, an analysis of the distribution of all monthly benefit payments, not including those to dependent parents, classified according to size of monthly benefit payments, shows for the same year that 11.55 per cent fell within the class $10-$19.99. Since dependent parents represented in monthly payments are few in number, their inclusion would not change the percentage appreciably. Because of the relative importance of the primary monthly benefit awards only, the greatest concentration of all payments to beneficiaries receiving monthly benefits was within the class $20-$29.99. The size distribution pattern for 1943 shows a slight shift of concentration toward the higher classes

5. Social Security Yearbook 1940, p. 160.

of benefit payments.[6] And there is reason to believe that the pattern of size distribution of monthly benefit payments will make some further shift upward by the time the selected years roll around.

Guided by the analysis of the size distribution of monthly payments for the years 1940 and 1943, it was assumed that for the selected years the benefit payments represented in the size distribution by the class "$20 and under" would approximate about 10 per cent of total monthly benefit payments. It is believed that this is sufficient to allow for the upward shift in concentration of payments by size distribution, if the average monthly primary benefit does not rise, as is expected, in most cases above the level of $30.

It was further assumed that, in the raising of the minimum monthly benefit payment from $10 to $20, the payments falling within the class "$10 and under" would be increased by 100 per cent and the payments falling within the class "above $10 and under $20" would be lifted (because of the greater concentration of payments nearer the upper limit) as much as 40 per cent, making an over-all increasing of approximately 50 per cent for the class of payments "$20 and under."

To obtain estimates of the cost for the assumed change in minimum monthly benefit the 10 per cent was applied to the estimated total monthly benefit payments in force for the selected years and, in turn, the 50 per cent was applied to the sums thus obtained, slight adjustments being made for suspensions and the like.

Change in the Maximum Monthly Benefit Limitation

In considering the present maximum monthly benefit limitation under the Old-Age and Survivors Insurance, it is well to remember that, because of the $3000 annual wage ceiling, in no case can the average monthly wages creditable to the insured be greater than $250; and that, when the benefit formula now operative is applied to this sum, his primary monthly benefit cannot exceed $40 plus one per cent for each year in which wages of $200 or more were received in covered employment. For it is this which

6. Based on tables showing distribution of monthly benefit amounts for selected family groups of beneficiaries 1940 and 1943, supplied by Merril G. Murray, Assistant Director of Bureau of Old-Age and Survivors Insurance,

operates most significantly to fix a maximum limit to monthly benefit payments. In most cases it does not allow benefit payments with respect to wages of any insured persons to rise to a point where some one of the other maximum limitations becomes operative.

In 1940 the maximum monthly benefit awards possible were: (1) $41.60 for primary beneficiary; (2) $62.50 for primary beneficiary and his wife; (3) $52.00 for widow current and one child; (4) $72.80 for widow current and two children; (5) $83.20 for widow current and three or more children. In every case the amount is below the statutory $85 limitation.

For the selected years 1955 and 1980 the maximum monthly benefits as fixed by the maximum $250 average monthly wage and the present benefit formula by classes of beneficiaries were computed. The figures are as follows:

	1955	1980
Primary	$47.60	$57.60
Primary and wife	71.40	86.40
Widow and one child	59.50	72.00
Widow and two children	83.30	100.00
Widow and three or more children	107.10	129.60

It can readily be seen that the cases in which the $85 limit will become operative are relatively few. If the $85 limitation alone were removed, the limitation of twice the primary monthly benefit would become effective: for the year 1955 at $95.20, and for the year 1980 at $115.20. If both the flat $85 and twice the primary monthly benefit limitations were removed, the 80 per cent of the insured's average monthly wage limitation would become effective at $200. Of course, this would not be the case if a flat limitation of $120 were effective, as is herein assumed. In fact, the assumed limitation of $120, in the absence of twice the primary monthly benefit limitation, would become effective in all cases where the insured's average monthly wage should exceed $150.

From the preceding analysis of the effect of maximum limitations on benefit payments it would seem that the assumed changes of raising the flat limitation from $85 to $120 and the removal of the limitation of twice the primary monthly benefit, without at the same time a change in benefit formula, are not of very great significance. For the selected years it was estimated (1) that, as determined by the present benefit formula, the amount of benefit **payments** exceeding the $85 and/or twice the primary monthly

benefit would approximate five per cent of the total monthly benefit payments, and (2) that the assumed maximum changes would lead to an increase in this class of payments of about 15 per cent. The final figures obtained in the application of these percentages were taken to represent the estimated aggregate cost of the assumed maximum changes.

Change in the Age of Eligibility for Women

Under the present Old-Age and Survivors Insurance program the age of eligibility for aged primary females, wives, widows, and mothers, is fixed at 65. The assumed change in regard to these women beneficiaries is to lower their age of eligibility for monthly benefits from 65 to 60.

For either women or men, to lower the age of eligibility from 65 to 60 would add materially to the total benefit payments. However, the amount added for the same change in age would be appreciably more for women than for men, simply because the former tend to outlive the latter (or retire earlier).

Upon the basis of the Commissioners 1941 Standard Ordinary and Industrial Mortality Tables it was estimated that the assumed change in age of eligibility would increase the benefit payments to aged women beneficiaries for the selected years by about 20 per cent (18 per cent as a direct result of the dropping of the age from 65 to 60 plus two per cent for additional beneficiaries resulting from the change.) Besides, it was foreseen that the assumed change might lead some insured men entitled to primary monthly benefits to retire sooner; and it was estimated that this would add about one per cent to the benefit payments to primary male beneficiaries. By applying the above percentages respectively to the estimated amount of payments in force to aged women beneficiaries and primary male beneficiaries for the selected years and making some adjustments for suspensions and the like, the total estimated cost of the assumed change in age of eligibility was computed.

Provision for Total and Permanent Disability Benefits

The present Old-Age and Survivors Insurance program makes no provision for benefit payments in the event an insured person becomes totally and permanently disabled before death or age of eligibility for retirement. During the time of such disability a

person who has attained the insured status required for Survivors or Old-Age benefits may come to lose it.

This study assumes a total and permanent disability provision which pays benefits on the same conditions as those for which payments are made at death or retirement. More particularly, it is non-retroactive in character; has a six months waiting period; pays primary and supplementary benefits until recovery, death or age of eligibility for retirement, and maintains the average wage basis at disability for the payment of subsequent survivors or old-age benefits not otherwise payable. Such a provision, of course, would add very much to the total cost of the Old-Age and Survivors Insurance program.

In estimating the cost of this assumed change the author bases his estimates upon those of Bronson in his Actuarial Study No. 19(b)[7] for a similar disability provision. However, he is inclined to believe that Bronson's "low" disability estimates are too low, and that his "high" disability estimates are too high. For the purpose of this study, therefore, the average of Bronson's "low" and "high" disability estimates for the selected years 1955 and 1980 is taken.

Extension of Coverage to Employment Now Excluded

The covered employments under the present Old-Age and Survivors Insurance program include what is ordinarily considered as those representing industry, commerce, and finance. The excluded employments are those representing railroads, agriculture, domestic service, government, and other minor employments as well as self-employment. In any extension of coverage it is by no means certain just what now excluded employments will become covered. However, the most commonly mentioned are agriculture, domestic service, and self-employment. Besides, some of the now excluded employments may become covered on a voluntary rather than on an involuntary basis.

For simplicity of analysis and in order to establish an outer limit for estimating costs, this study assumes that the extension of Old-Age and Survivors Insurance coverage will be made essentially all inclusive as to employments. No attempt is made to separate the possible voluntary covered persons from those involuntarily covered. Moreover, no consideration is given to the probability

7. Bronson, op. cit., pp. 33–38.

that many now covered under other so-called social insurance systems (namely, the federal railway, the federal civil service and the state and local government retirement systems) may not be brought under the Federal Old-Age and Survivors Insurance. The number covered by these other so-called social insurance systems was estimated in 1942 to be 6,500,000 persons.[8] The inclusion or exclusion of this group, it is recognized, is significant. The number of persons involved, being quite large, normally represents employments having a relatively high degree of stability. Yet there is a recognized shifting of persons to and from these employments and the employments covered by the Old-Age and Survivors Insurance. It is possible, too, that if the latter system were extended to include, on a voluntary or an involuntary basis, the employments covered by the other so-called social insurance systems, it would make these systems supplementary to it or reduce them greatly in significance by change or even abandonment. In the light of these and other considerations as stated above, it was decided to include the group in the extension of coverage of the Old-Age and Survivors Insurance.

While no reliable figures are available, it is obvious from what facts are known that the movement of persons into and out of covered employment is quite significant. As a result of the mobility of labor in this country, many persons employed at some time during the period of a year in covered employment are at other times in excluded employment. Because of this fact many persons employed during the course of a year have also been counted in estimates of the number of persons in excluded employment. Just how many persons are counted two or more times is not known. However, the number of employed persons included in the labor force for any year presumably is made up of three classes: (1) those in covered employment only; (2) those in covered and excluded employment; (3) those in excluded employment. For example, in 1942 the number of employed persons in the labor force was 51.9 million. At the same time the number of persons employed at some time during the year in covered employments was approximately 45 million and in excluded employments 26 million, making a total for both classes of employment of 71 million. Since the number of actual persons employed for the year cannot be assumed to be more than 51.9 million, the difference between

8. Social Security Yearbook 1942, p. 26.

71 million and 51.9 million, or 19.1 million, represents the number of persons counted twice (or more) in the category of covered and also of excluded employments. Thus the labor force for 1942 may be classified as follows: 25.9 million persons in covered employments only; 19.1 million persons in covered and excluded employments; and 6.9 million persons in excluded employments only. Of course, some of the 6.9 million persons may have been in covered employments prior to 1942 and may have earned creditable wages under the Old-Age and Survivors Insurance program. The point is that if the program had been made all-inclusive as to employments in 1942, the additional covered persons for the year would have been 6.9 million.

That is the reasoning applied to the selected years to determine the increase in the number of persons covered, if coverage should be made, essentially, all-inclusive as to employments. Estimates of the number of persons in the labor force and of the number of persons covered under the Old-Age and Survivors Insurance without extension of coverage for the selected years were obtained from W. R. Williams, an Actuarial Consultant to the Social Security Board.[9] The difference between these two sets of figures was taken to represent the additional covered persons resulting from the assumed extension of coverage.

The additional persons covered for the selected years were assumed to lead proportionately to an increase in the number of persons insured and, in turn, in the number of beneficiaries. To determine the additional persons insured, estimates of persons insured under the program without extension of coverage were obtained from Mr. Williams. To determine the additional number of beneficiaries, the total number of beneficiaries in force as given in Actuarial Study No. 19, Table I, p. 12, was used. The resulting figures for additional beneficiaries were adjusted to allow for the indirect effect of assumed extension upon the number of beneficiaries arising out of the elimination of the class of persons in covered and excluded employments in the labor force and of the opportunities for employment for beneficiaries.

After estimates for the cost of extension of coverage only had been made, the cost of the assumed benefit changes relative to the extended coverage was computed by means of proportion.

9. The use of these data is, of course, the author's own responsibility.

TABLE III(a) LEVEL WAGE

OASI PROGRAM SHOWING COSTS OF BENEFITS IN DOLLARS AND AS A PER CENT OF COVERED PAYROLLS OR INCOME[1]
CLASSIFIED AS TO ASSUMED CHANGES FOR 1955 AND 1980
(Low and High Assumption)
(Amounts in Millions of Dollars)

	1955 Low Amount	1955 Low Per Cent of Payroll	1955 High Amount	1955 High Per Cent of Payroll	1980 Low Amount	1980 Low Per Cent of Payroll	1980 High Amount	1980 High Per Cent of Payroll
A. COST UNDER PRESENT PROGRAM WITH ASSUMED CHANGES OF BENEFITS								
1. Cost of present program	$893	2.51	$1,171	2.14	$2,625	7.29	$3,958	6.94
2. Cost of benefit changes								
a. Lump-sum	23	.06	26	.05	52	.14	63	.11
b. Parent	7	.02	13	.02	11	.03	28	.05
c. Minimum	45	.13	57	.11	129	.36	194	.34
d. Maximum	7	.02	9	.02	19	.05	29	.05
e. Eligibility age	48	.13	66	.12	219	.62	333	.58
f. Disability	328	.92	234	.43	581	1.61	431	.76
Total changes (a–f)	450	1.28	405	.75	1,011	2.81	1,078	1.89
Total (A–1 and A–2)	$1,351	3.79	$1,596	2.89	$3,636	10.10	$5,036	8.83
B. COST UNDER PRESENT PROGRAM WITH ALL ASSUMED CHANGES								
1. Cost of extension of coverage								
a. Cost of present program (A–1)	$893	1.67	$1,171	1.51	$2,625	5.04	$3,958	4.83
b. Cost of extending coverage	624	1.17	708	.91	1,428	2.74	1,918	2.34
Total (a and b)	$1,517	2.84	$1,879	2.42	$4,053	7.78	$5,876	7.17
2. Cost of changes of benefits								
a. Cost under present coverage (A–2)	458	.86	405	.52	1,911	1.94	1,078	1.32
b. Cost because of extended coverage	320	.60	245	.32	550	1.06	522	.63
Total (a and b)	778	1.46	650	.84	1,561	3.00	1,600	1.95
Total (B–1 and B–2)	$2,295	4.30	$2,529	3.26	$5,614	10.78	$7,476	9.12

1. Costs under B are expressed as a percentage of covered income for all employments, including self-employment; while under A they are expressed as a percentage of payrolls of employments now covered.

TABLE III(b) LEVEL WAGE

OASI PROGRAM SHOWING COSTS OF BENEFITS IN DOLLARS AND AS A PER CENT
OF COVERED PAYROLLS OR INCOME[1] CLASSIFIED AS TO ASSUMED CHARGES
FOR THE YEAR 2000

(Low and High Assumption)
(Amount in Millions of Dollars)

| | Low | | High | |
	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. COST UNDER PRESENT PROGRAM WITH ASSUMED CHANGES OF BENEFITS				
1. Cost of present program	$3,232	8.98	$6,066	10.64
2. Cost of benefit changes				
a. Lump sum	61	.17	86	.15
b. Parent..........	11	.03	26	.04
c. Minimum	157	.44	297	.52
d. Maximum	24	.07	45	.08
e. Eligibility age ...	284	.79	557	.96
f. Disability	570	1.58	438	.77
Total changes *(a–f)* .	1,107	3.08	1,449	2.52
Total (A-1 and A-2)...	4,339	12.06	7,515	13.16
B. COST UNDER PRESENT PROGRAM WITH ALL ASSUMED CHANGES				
1. Cost of extension of coverage				
a. Cost of present program (A-1)	$3,232	6.16	$6,066	7.37
b. Cost of extending coverage.	1,500	2.86	2,679	3.26
Total *(a* and *b)*.....	4,732	9.02	8,745	10.63
2. Cost of changes of benefits				
a. Cost under present coverage (A-2)...	1,107	2.11	1,449	1.76
b. Cost because of extended coverage	563	1.07	640	.78
Total *(a* and *b)* ..	1,670	3.18	2,089	2.54
Total (B-1 and B-2) ..	6,402	12.20	10,834	13.17

1. Costs under B are expressed as a percentage of covered income for all employments including self-employment; while under A they are expressed as a percentage of payrolls of employments now covered.

TABLE IV(a) INCREASING WAGE

OASI PROGRAM SHOWING COSTS OF BENEFITS IN DOLLARS AND AS A PER CENT OF COVERED PAYROLLS OR INCOME[1]
CLASSIFIED AS TO ASSUMED CHANGES FOR 1955 AND 1980

(Low and High Assumption)

(Amounts in Millions of Dollars)

	1955 Low		1955 High		1980 Low		1980 High	
	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. COST UNDER PRESENT PROGRAM WITH ASSUMED CHANGES OF BENEFITS								
1. Cost of present program	$900.00	2.31	$1,181.00	1.99	$2,734.00	5.67	$4,101.00	5.66
2. Cost of benefit changes								
a. Lump-sum	23.18	.06	26.23	.04	53.23	.11	65.27	.09
b. Parent	7.06	.02	13.12	.02	11.46	.02	29.01	.04
c. Minimum	45.36	.13	57.51	.10	134.42	.28	209.84	.29
d. Maximum	7.06	.02	9.08	.02	19.80	.04	30.04	.04
e. Eligibility age	48.38	.12	66.27	.11	228.20	.47	344.99	.48
f. Disability	330.62	.85	235.77	.40	605.40	1.26	446.52	.62
Total changes ($a-f$)	461.66	1.20	407.98	.69	1,052.51	2.18	1,125.67	1.56
Total (A-1 and A-2)	1,361.66	3.51	1,588.98	2.68	3,786.51	7.85	5,226.67	7.22
B. COST UNDER PRESENT PROGRAM WITH ALL ASSUMED CHANGES								
1. Cost of extension of coverage								
a. Cost of present program (A-1)	$900	1.55	$1,181	1.42	$2,734	3.91	$4,101	3.94
b. Cost of extending coverage	630	1.08	715	.86	1,488	2.13	1,987	1.91
Total (a and b)	$1,530	2.63	$1,896	2.28	$4,222	6.04	$6,088	5.85
2. Cost of changes of benefits								
a. Cost under present coverage (A-2)	$465	.80	$408	.49	$1,053	1.51	$1,126	1.08
b. Cost because of extended coverage	323	.56	248	.30	573	.82	540	.52
Total (a and b)	788	1.36	656	.79	1,626	2.33	1,666	1.60
Total (B-1 and B-2)	$2,318	3.99	$2,552	3.07	$5,848	8.37	$7,754	7.45

1. Costs under B are expressed as a percentage of covered income for all employments, including self-employment; while under A they are expressed as a percentage of payrolls of employments now covered.

TABLE IV(b) INCREASING WAGE

OASI Program Showing Costs of Benefits in Dollars and as a Per Cent of Covered Payrolls or Income[1] Classified as to Assumed Charges for the Year 2000

(Low and High Assumptions)
(Amount in Millions of Dollars)

| | Low | | High | |
	Amount	Per Cent of Payroll	Amount	Per Cent of Payroll
A. Cost Under Present Program with Assumed Changes of Benefits				
1. Cost of present program	$3,539	6.37	$6,550	8.15
2. Cost of benefit changes				
a. Lump sum	67	.12	93	.12
b. Parent..........	12	.02	28	.03
c. Minimum	171	.31	321	.40
d. Maximum	26	.05	49	.06
e. Eligibility age ...	309	.56	601	.75
f. Disability.......	621	1.12	473	.59
Total changes (*a–f*).	1,206	2.18	1,565	1.95
Total (A-1 and A-2)...	4,745	8.55	8,115	10.10
B. Cost Under Present Program with all Assumed Changes				
1. Cost of extension of coverage				
a. Cost of present program (A-1)...	$3,539	4.36	$6,550	5.65
b. Cost of extending coverage........	1,635	2.02	2,893	2 49
Total (*a* and *b*)	5,174	6.38	9,443	8.14
2. Cost of changes of benefits				
a. Cost under present coverage (A-2) ..	1,206	1.49	1,565	1.35
b. Cost of extended coverage . . .	614	.76	691	.60
Total (*a* and *b*) ...	1,820	2 25	2,256	1 95
Total (B-1 and B-2).. ..	6,994	8.63	11,699	10.09

1. Costs under B are expressed as a percentage of covered income for all employments including self-employment; while under A they are expressed as a percentage of payrolls of employments now covered

SUMMARY OF COST ESTIMATES

A classified summary of these cost estimates, in millions of dollars and as a per cent of payroll for the selected years is given in Tables III and IV. Table III shows the cost estimates for the program without any of the assumed changes and with all of the assumed changes in benefits itemized and totalled. It does not show the cost estimates of the program with respect to the assumed extension of coverage. This is shown in Table IV, which shows cost estimates of the program with consideration given to all assumed changes, first, with respect to extension of coverage only, and then with respect to assumed changes in benefits without itemization.

CONCLUSION

The cost estimates contained in this study have been most difficult to make. They are long range in character and lack an adequate basis of experience. They are largely synthetic and to an extent arbitrary. For these reasons they cannot be taken as final. But as long as the basic assumptions hold true, they are believed to be sufficiently reliable to be of aid in the determination of a national policy in regard to the future of the Old-Age and Survivors Insurance program. What the national policy should be is not relevant to this study. However, the study does show that costs for the present program may be expected to rise significantly and that the assumed changes, while they vary widely, do add materially to the total cost in dollars of benefit payments.

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SIR JAMES STEUART ON THE PUBLIC DEBT

SUMMARY

I. The British public debt in the eighteenth century and contemporary opinion, 451. — Steuart in the literature, 452. — II. Steuart's views on the public debt: public vs. private debt, 454; public debt and circulation, 455; public credit as the balance wheel, 456; comparison with taxes, 457; social effects, 458; repayment, 459; debt limits, 462. — III. British and French credit in the eighteenth century: deterioration of French credit, 466; influence of form of government, 467; public confidence, 467; narrowness of the market, 468, burdensome taxation, 468; the sinking fund, 469; interest rates, 471; qualifications, 471. — IV. The "evolutionist approach," 472. — V. Conclusion: Steuart's position, 475.

I. The British Public Debt in the Eighteenth Century

The stupendous rise of the public debt during the present war has aroused concern among both economists and laymen over the ability of the nation to cope with its postwar economic problems in the face of what seems to be an unprecedented burden. This problem, however, is by no means unparalleled in history. During the eighteenth century Great Britain was involved in five wars, spaced over almost half of the century. During that period the public debt grew by leaps and bounds. It was 16.4 million pounds in 1701, 78.3 million in 1748, and 252.5 million in 1793, almost sixteen times its original size.[1] From the beginning of the war of the Spanish succession (1701) to the end of the Napoleonic Wars (1815) the annual rate of increase was 3.6 per cent. The rises were even more spectacular during actual war years, e.g. ten per cent from 1701 to 1713, and 8.5 per cent from 1755 to 1763.

The impact of this continuous growth of the public debt on the economy of that period was in several respects more striking than that of the much larger increases of our time. In many ways, indeed, it supplies the key to the economic history of Britain and her rapid rise to commercial and industrial supremacy over the Continental nations. It contributed to economic development and exercised a stabilizing influence on British capitalism. It gave the growing class of merchants and traders the necessary security

1. **Finance Accounts of the United Kingdom of Great Britain and Ireland.**

and liquidity to enable them to invest the balance of their funds in riskier enterprises. The stock market transactions of the time were almost exclusively in government securities. Public issues also provided basic reserves for the operations of the Bank of England.

The public debt had also an important social function. It built up a new financial class to contend in influence and wealth with the landed aristocracy. It widened and deepened the interest of large classes of bondholders in the fate of the state and the stability of its credit. Thus public credit exercised an influence which was socially beneficial, binding various groups together and making them more aware of their community of interest.

This powerful contribution to social and economic development was not recognized by most of the contemporary writers. Only Sir James Steuart[2] saw the social and economic implications of the growing public debt. His principal work appeared fifteen years after Hume's essay on Public Credit and nine years before Smith's Wealth of Nations. Neither of these authors grasped the significance of the essential and positive rôle which public credit was playing in the evolution of the British economy. Still imbued with the concept of private debts, they feared and resisted debt increases, and suggested policies that were both unrealistic and irresponsible. The basic fallacy of their approach was an unwillingness to leave room in their system for the constructive function of government actions as one of the vehicles of progress. As a result, their views were consistently out of touch with realities, and refuted again and again by the actual course of events.

Little attention has been given to Steuart in the British literature. Only very recently has the originality and significance of his

2. Sir James Steuart was born in Scotland in 1712. He studied law at the University of Edinburgh, after which he spent five years abroad familiarizing himself with the manners, customs and laws of different countries. On his return he retired to his estate at Coltness, after an unsuccessful attempt at politics. In 1745 he was exiled from Scotland because of his activities in connection with the Jacobite attempt on the Crown, and was not allowed to return until 1762. He spent these seventeen years in five different countries, making a careful study of the political economies of the Continent. During this time he finished the major portion of his chief economic work, Principles of Political Oeconomy, which was finally published in 1767. In later years he turned his writing efforts to more immediate problems — money, land reform, etc. — on the one hand, and to philosophy, on the other. He died in 1780.

Public Credit is discussed in Part IV of Book IV of the Principles; particular aspects are also mentioned in many other parts of the study.

approach to economic problems been at all recognized. Together with Richard Jones, Steuart is mentioned by Grossman[3] as one of those few writers who distinguished themselves from the classical British economists by stressing the element of growth and evolution of economic institutions.

The scant attention given Steuart may be due in part to the view that he was completely overshadowed and rendered obsolete by the work of Adam Smith. Smith himself contributed to this attitude; although familiar with Steuart's book, he never mentions Steuart in the Wealth of Nations. In a letter to Pulteney[4] he writes:

I have the same opinion of Sir James Steuart's book that you have. Without once mentioning it, I flatter myself that any false principle in it will meet with a clear and distinct confutation in mine.

This tendency to minimize Steuart's contribution can be found almost without exception up to the present time. He has been charged with outdated mercantilist views,[5] failure to grasp the nature of money, capital and interest,[6] and with being obscure and contradictory and having added comparatively little to the body of economic doctrine.[7]

Steuart's work has found greater recognition and better understanding in the German literature. To scholars who were interested primarily in the study of history and institutions, and who accepted the ideas of Adam Smith only with considerable limitations, Steuart's approach was particularly appealing. Hasbach,[8] appraising Steuart's place in the history of economic doctrine, considers him one of the greatest economists of all time, and believes that Smith was greatly indebted to him. But even he shows only a limited understanding and appreciation of Steuart's contribution to the public debt problem.

We shall not attempt here to refute or qualify these opinions concerning Steuart's contribution. The purpose of the present

3. H. Grossman, "The Evolutionist Revolt Against Classical Economics, II," Journal of Political Economy, December, 1943.

4. Quoted in J. K. Ingram, A History of Political Economy, p. 87.

5. Ingram labels him a mercantilist writing at a time when the appeal of mercantilist doctrines was already past, and calls his work "one of the most unfortunate of books." Op. cit., p. 86. Cf. also E. A. J. Johnson, Predecessors of Adam Smith, Chap. XI.

6. Fraser, Encyclopaedia of the Social Sciences.

7. Erich Roll, A History of Economic Thought, p. 127.

8. Hasbach, Untersuchungen über Adam Smith.

article is to show that only in Steuart's discussion did the development and rôle of British credit during the eighteenth century receive adequate recognition and understanding. Beyond that, we find a remarkable similarity between his ideas and modern views on the public debt. Although often stated clumsily and without the necessary qualifications, the rudiments of modern public debt theory can be found in several of his discussions. Still more important, Steuart's approach has in it the elements of an attitude toward the public debt problem which is in fundamental contrast to that of the classical writers, and which leads to a sound appraisal of the public debt problem regardless of time and place.

II. Steuart's Views on the Public Debt

Public vs. Private Debt. Steuart's approach to the problem of public borrowing is indicated by his preference for the term public "credit" rather than public "debt." This follows from his view that credit is an asset to the community — one of the tools of progress. He sees two important differences between public and private credit. One is in the person of the debtor. Under a private debt contract the person who incurs the debt is himself responsible to the creditors for its repayment. On the other hand, those who contract an obligation in the name of the state are not themselves responsible for it. "Hence it happens, that private people are commonly more anxious about paying their debts than statesmen are who administer for the public."[9] Another important difference is their effects on the prosperity of the debtor:

The interest of a private debtor is simple and uncompounded; that of a state is so complex, that the debts they owe, *when due to citizens*, are, on the whole, rather advantageous than burdensome: they produce a new branch of circulation among individuals, but take nothing from the general patrimony.[1]

Public debts play a constructive rôle in the economy. Internal public debts do not burden the economy, waste resources, or make the economy poorer. On the contrary, they are advantageous, and serve to increase productivity. ". . . the country is neither poorer or richer, when considered in a cumulative view, than if the same sum had been lent to private people at home."[2] Rather, ". . . the effect of public borrowing, or national debt, is

9. Steuart, op. cit., Vol. II, p. 625.
1. Loc. cit.
2. Ibid., p. 449.

to augment the permanent income of the country, out of stagnating money, and balances of trade."[3]

Steuart was aware that this concept of public credit was quite new. Fifty years earlier, when Davenant wrote on the subject, these effects of public credit were not yet recognized. It was considered closely akin to private credit, and both Parliament and the people, on the whole, looked upon it with suspicion. The creditors were viewed as enemies of the public, and lending to the Government was feared as an opportunity for personal aggrandizement.[4] The relation between the use of public credit and economic progress had not yet been realized.

Public Debt and Circulation. The public credit, according to Steuart, is an important instrument in promoting the development of industry and trade in a country, but it can perform this function only if the economy is well supplied with a circulating medium. Economic development needs as its vehicle an adequate and sufficient amount of circulation to implement the demand for consumption goods and make it possible to dispose of the products of industry.

Metallic circulation, however, cannot keep pace with the increased requirements of the economy; it must be supplemented by fiduciary circulation. This leads to the establishment of credit. The increased liquidity introduced by government securities makes it possible to "melt down private property." Individuals can now borrow upon their property, traders on their stock in trade, and holders of government bonds on government paper.[5] In this respect public credit has the same function as private credit. It makes the economy more liquid and provides funds for industry and

3. Ibid., p. 451.
4. Ibid., p. 357: "Men, at that time, had a terror upon them in contracting debts for the public: they considered the nation as they would a private man, whose interest is one, uncompounded, and relative to himself alone: in this light, creditors appeared as formidable as enemies; they were looked upon by ministers as such; and this general opinion on one side, contributed, no doubt, to make the monied people less interested in the distress of government, and more ready to lay hold of every opportunity of improving such occasions, for their own advantage."
5. Ibid., Vol. I, p. 366: "Those nations, therefore, who only circulate their metals, confine industry to the proportion of the mass of them. Those who would circulate their lands, their houses, their manufactures, nay their personal service, even their hours, might produce an encouragement for industry far beyond what could be done by metals only. And this may be done, when the progress of industry demands a circulation beyond their power."

trade. Public securities offer a ready investment for people who have available funds which they would not otherwise use.

The beneficial influence of such an investment opportunity was admitted even by Hume, who pointed out that the merchants who can invest part of their funds in government issues are thereby in a position to trade upon lower profit, reducing the price of the commodities and encouraging greater consumption. But he felt that the unfavorable effects of public debts on the economy were much greater, and adds, "You will find no comparison between the ill and the good which result from them."[6]

Steuart makes it clear that investment in government securities does not take the place of other investment opportunities, but is a net addition to total investment. In a way it merely supplements private investment.[7]

Public Credit as the Balance Wheel. Steuart recognizes that public borrowing must be adjusted to the conditions of trade at the particular time. Public borrowing is inappropriate as long as "circulation is full," because then it would only raise the rate of interest and have undesirable consequences for commerce. On the other hand, when circulation is stagnating in one part of the economy and there is unemployment and a slackening of trade and industry, the state should absorb this excess and through its expenditures throw it into new channels of circulation.[8] Thus the use of public credit is conceived as the balance wheel in the economy. It keeps resources fully employed, and prevents stagnation in any part of the economy from having an adverse effect elsewhere. In addition public credit is a necessary instrument of war finance.[9]

This balancing function of public credit, however, cannot be achieved without the active intervention and guidance of the statesman. As conditions seem to require, he should discourage luxury and prodigality, or encourage production and consumption.[1]

6. Hume, "Of Public Credit," p. 7.
7. Steuart, op. cit., Vol. II, p. 450: "We have said that loans are filled by money stagnating, which the owner desires to realize: if he cannot do better, he lends it to the government; if he can do better, he will not lend it."
8. Ibid., p. 449: ". . . we consider it as in a state of stagnation; but being lent to government, it is thrown into a new channel of circulation."
9. Ibid., p. 371, note: "Nothing however is more certain than that in time of war, far greater sums are required than any people can pay, without contracting debts."
1. Ibid., Vol. I, p. 375: "He ought at all times to maintain a just proportion between the produce of industry, and the quantity of circulating equivalent, in the hands of his subjects, for the purchase of it; that, by a steady and

In general, his actions should be directed toward an expansion of production and consumption, rather than having a restrictive effect.[2]

In Steuart's view the harmony between the public and private interest assumed by the classical economists cannot be taken for granted. The self-interest of individuals can be relied upon for the management of their own affairs; it does not, however, necessarily ensure the welfare of the public. The function of the statesman is therefore to safeguard the public interest.

Comparison with Taxes. According to Steuart taxes perform a function similar to that of public credit, making people more industrious and enriching the nation. "When they are properly levied, they only abridge unnecessary private expence: when they are properly applied by the state, they advance improvement every where."[3] The industrious classes do not bear the burden of increased taxation, which falls rather upon the idle rich in proportion to their luxury only. On the other hand, the increased revenue in the hands of the state makes possible expenditures which stimulate trade and industry and provide employment.[4] Thus the real fund from which taxes are paid is that produced by the additional activity and industry which they bring about.[5]

For taxes to have this effect, however, the monetary circulation of the country must be increased to the same extent as the taxes;[6] otherwise the economic flow and the industry of the country will be interrupted. In earlier times, taxation was of little use to the Government and a considerable burden on the people, simply because the volume of monetary circulation was inadequate for maintaining the level of economic activity, despite the additional impositions. Banking facilities were not available for turning "the value in the hands of the people" into money. With adequate monetary mechanisms, however, and when properly imposed,

judicious administration, he may have it in his power at all times, either to check prodigality and hurtful luxury, or to extend industry and domestic consumption, according as the circumstances of his people shall require the one or the other corrective, to be applied to the natural bent and spirit of the times."

2. Ibid., pp. 490–491.
3. Ibid., Vol. II, p. 640.
4. Ibid., p. 554.
5. Ibid., p. 555: "This is the fund out of which the greatest part of taxes is paid; it is a fund created by the industrious Britons, which I hope will increase for many centuries, tho' taxes should increase in proportion."
6. Ibid., p. 366.

taxes do not burden the economy. They "resemble the expence laid out upon new establishments for improvement; because in their consequences they augment the prosperity and ease of the whole people, not by being levied, but being properly applied."[7]

Thus it is clear that Steuart's concept of the impact of government finance on the economy differs basically from that of the classical writers. The latter pictured an economy burdened and oppressed by public debts and taxes, which dissipated resources, destroyed existing capital and prevented, or at least retarded, capital accumulation. In addition, they argued that the public debt gave rise to an idle class of stockholders living on their revenues and constituting a drag on the industrious groups in the economy. Steuart, on the other hand, looks upon debts and taxes as important instruments for promoting thrift and industry and leading the economy to ever rising levels of production, consumption, and income. His whole concept of the economic process is much more dynamic, and emphasizes change and growth as compared with the more static orthodox approach of his time.

Social Effects. For a correct appraisal of the rôle and impact of public debts it is not sufficient to discuss merely their effect on the economy; their influence on the social structure must also be taken into consideration. Actually, the use of public credit has usually been rejected on the ground that it upsets and changes the social structure in a direction considered undesirable by the writer.

A particularly clear instance of this is found in Hume's violent rejection of the public debt on the ground that it would disrupt the existing social structure, which he claimed conformed to the natural order of things. The public debt would create a class of stockholders who would draw "almost all the rent of the land and houses, besides the produce of all the customs and excises," and would "sink into the lethargy of a stupid and pampered luxury, without spirit, ambition, or enjoyment. Adieu to all ideas of nobility, gentry, and family."[8] This stock capital conveys "no hereditary authority or credit to the possessors" and thus "the several ranks of men, which form a kind of independent magistracy in a state, instituted by the hand of nature, are entirely lost."[9]

7. Ibid., p. 643.
8. Hume, op. cit., p. 10.
9. Loc. cit.

The weakened economic position of the landed gentry would also weaken their political prestige and influence and would result in despotism.[1] Similarly, social stigma is put on the creditors as an idle class making no "productive" contribution to the economy.

There can be no doubt that the growth of the public debt in Great Britain during the eighteenth century had a profound social influence. It created a new form of wealth and security in addition to land — the ownership of government bonds. And it promoted thrift and savings by providing an investment which was more readily accessible than the purchase of land; through the expansion of public credit a growing part of the population became property holders. It developed their interest in the affairs of the state, and a spirit of community, and made for political stability. Government thus became no longer the privilege of a few, but rather the interest of many.

Steuart is fully aware of these effects of public credit and looks upon them favorably. He states that the increase of public debts creates an enormous fund of property in the economy,[2] and produces a "vibration in the balance of domestic wealth" creating a monied interest which grows in proportion as debts increase. He approves the influence of greater liquidity in making fortunes more equal.[3] It is true that with the swelling of public debts the creditors' position in the economy becomes stronger, but a more important effect is to break down the barriers between various social groups and promote greater understanding and social flexibility.[4]

Repayment. Steuart does not feel that extensive debt repayment is always necessary or desirable. The proper policy with respect to debt repayment depends upon the existing circumstances. This is in marked contrast to the classical writers who postulated complete debt repayment as a first requirement of sound debt

1. Ibid., p. 11: "And the middle power between King and people being totally removed, a grievous despotism must infallibly prevail."
2. Op. cit., Vol. II, p. 446.
3. Ibid., Vol. I, p. 367: "The use of symbolical money is no more than to enable those who have effects . . . to give an adequate circulating equivalent for the services they demand, . . . it is a method of melting down, as it were, the very causes of inequality, and of rendring fortunes equal."
4. Ibid, Vol. II, p. 446: "The allurement of acquiring land-property is very great, no doubt, especially to monied men. The ease and affluence of those, on the other hand, who have their capitals in their pocket-books, is very attracting to the eyes of many landlords, especially at a time when they are paying the heavy taxes laid upon their possessions."

management. His position is not surprising, in view of his concern over the effect of fiscal measures on circulation and general economic conditions. While debt repayment in certain situations was desirable, he felt that at other times it would remove an important source of investment and have a depressing influence on the economy.

Steuart explicitly recognized that the economic conditions upon which this issue hinges had changed drastically as compared with earlier times. When capital was scarce and the demands of trade and industry great, because of economic expansion, prompt repayment was a primary rule of debt management. The monetary circulation was inadequate to satisfy both the demands of Government and of industry;[5] hence the rate of interest tended to rise. Thus a good case could be made at that time for Davenant's recommendation that borrowing be preferably on short-term and his view that "the most adviseable plan of all, could it be accomplished, was to raise the money wanted within the year."[6] The psychological attitude of the people was also strongly for such a policy.[7] By Steuart's time, on the other hand, these conditions had changed considerably. In an economy adequately provided with capital, the public was now interested in a stable return on their investments, and the main attention of the Government in its policy of debt management was directed toward maintaining a stable rate of interest.[8]

The difference between Steuart's views and those of the classical writers on the question of debt repayment becomes particularly evident with regard to the question whether or not the public debt should be repaid immediately after the end of a war. Wars, as is well known, have been the most important reason for debt increase, particularly during the eighteenth century. The classical writers

5. Ibid., p. 361: "The plain matter of fact was, that trade at that time was only beginning to take root in England, and demanded funds to carry it on. The use of banks had not then been discovered, for turning property into money. Circulation, consequently, was confined to the coin; and profits on trade were very great. All these circumstances rendred capitals of essential use; and the consequence was, to raise interest to an excessive height."

6. Ibid., p. 357.

7. Ibid.; p. 359: "The minds of men at that time were totally taken up with the payment of capitals; and providing these could be discharged in a few years, it was no matter, they thought, what they cost in the mean time."

8. Ibid., p. 361: "Capitals now are only of value in proportion to the interest they bring; and so long as the interest paid on public debts is sufficient to keep circulation full, and no more, interest will stand as it is."

urged immediate debt repayment, both to make up for the loss of capital and to prepare the nation financially in case another emergency should occur. Steuart does not share this view. He is concerned about the possible consequences of a sudden falling off of government expenditures resulting in a "regorging of money."[9] If the financing of the war has been properly managed, immediately after the war the economy is likely to find itself with an excess of money for the reduced volume of transactions. To head off the adverse effects of such a situation, Steuart advocates an increase of taxes immediately after the war.[1]

He does not, however, want to have the revenue used for debt repayment, but rather to promote expenditure, consumption and economic prosperity. This purpose would not be achieved by debt repayment "because it is observed, in general, that those who have property in the funds are not apt to squander money when unexpectedly thrown into their hands; on the contrary, they are commonly found to live very much within their income."[2]

Partial debt repayment, however, may be necessary in order to strengthen the public credit and to reconvert expensive short-term war loans into long-term securities bearing lower interest. This refunding operation can usually be carried out without difficulty, and little net debt repayment will be necessary. Soon after the Government has started repaying debts the creditors will "beg for mercy," and will be glad to accept the new issues, rather than have the capital repaid to them.

The international investment outlook, however, may affect the success of such a refunding policy, and the Government may actually have to repay the debt incurred during the war. As an illustration Steuart mentions the different position in which Great Britain found herself after the two wars in 1749 and 1763. After the former war a reduction of the rate of interest was possible and was generally accepted by the creditors, because no attractive alternatives were available.[3] At the end of the second war, on the other hand, a large outflow of funds took place, because foreign lenders had played an important part in financing the war. This caused

9. Ibid., p. 477: "We have said above, and experience proves the truth of it, that at the end of a war circulation becomes too full for domestic uses; and that the superfluity of money is realized upon property."
1. Loc. cit.
2. Ibid., pp. 477–478.
3. Ibid., p. 395.

the price of government securities to fall and no reconversion was possible.

On the other hand, if there exists a shortage of capital immediately after the war, reflected in a correspondingly high rate of interest, it may be advisable for a country to borrow abroad.[4]

Debt Limits. Steuart's position on the issue of debt repayment obviously raises the question of the effects of a continuous debt increase on the economy and the prospects of state bankruptcy as the ultimate result of such a policy. Both Hume and Smith had very strong convictions on that point, and predicted the inevitable breakdown of public credit. In this connection their refusal to learn from experience and face the facts realistically is remarkable. Coupled with these predictions are suggestions for policy which cannot be termed other than highly irresponsible, such as Smith's advocacy of "a fair, open, and avowed bankruptcy"[5] as the best solution. The chaos which such a step would have precipitated can hardly be exaggerated; fortunately this was not the course which Great Britain followed.

Considering the hostile attitude of the classical writers toward public credit, their failure to distinguish between a public and a private debt, and the one-sided way in which they stressed its dangers, while overlooking important beneficial consequences, their position on this issue is not surprising. Although it would not be fair to charge them with inability to foresee important future developments, such as the tremendous growth of wealth and income which took place in Great Britain during the eighteenth century and particularly since the end of the Napoleonic Wars, their stubborn refusal to learn from the events of history must be held strongly against them. And this particularly in the light of the greater insight and understanding shown by one of their contemporaries, Sir James Steuart.

Two illustrations will support this point. In advocating an open repudiation of the public debt as the more desirable alternative to choose between the "temporary safety of thousands" (the stockholders) as against the sacrifice of millions, Hume remarks, "Either the nation must destroy public credit, or public credit will

4. Ibid., p. 451: "That if the high interest at home proceeds from want of money, that is to say, from circulation not being full enough, it is their interest to borrow, were it for nothing else than to supply circulation; because unless this be full, all industry must languish."

5. Smith, *Wealth of Nations*, Modern Library Edition, p. 883.

destroy the nation."[6] He is convinced that the collapse of public credit is inevitable and only a question of time:

One would incline to assign to this event a very near period, such as half a century, had not our fathers' prophecies of this kind been already found fallacious by the duration of our public credit *so much beyond all reasonable expectation.* . . . We shall, therefore, be more cautious than to assign any precise date; and shall content ourselves with pointing out the event in general.[7]

Despite this caution as to the exact timing, however, the event is certain. Summing up his discussion of the various "death alternatives" of the public credit, Hume says:

These seem to be events, which are not very remote and which reason forsees as clearly almost as she can do any thing that lies in the womb of time. And though the ancients maintained, that, in order to reach the gift of prophecy, a certain divine fury or madness was requisite, one may safely affirm, that, in order to deliver such prophecies as these, no more is necessary than merely to be in one's senses, free from the influence of popular madness and delusion.[8]

Adam Smith takes a similar, though slightly more cautious, view:

Great Britain seems to support with ease, a burden which, half a century ago, nobody believed her capable of supporting. Let us not, however, upon this account rashly conclude that she is capable of supporting any burden; nor even be too confident that she could support, without great distress, a burden a little greater than what has already been laid upon her.[9]

Steuart, on the other hand, does not believe that the accumulation of internal debts must ever lead to bankruptcy.[1] Theoretically the process can go on indefinitely, since it involves only a transfer between various groups in the economy. What it means is that "the whole income of the nation will remain in perpetual fluctuation, passing from one set of creditors to another, the statesman still retaining the administration of it for their use."[2]

This does not mean that such a scheme must necessarily

6. Hume, op. cit., p. 13.
7. Ibid., p. 17, footnote. (Italics added).
8. Ibid., p. 18.
9. Smith, op. cit., p. 882.
1. Steuart, op. cit., Vol. II, p. 463: "Debts have increased far beyond the imagination of every mortal. Great men have uttered prophecies, which have proved false, concerning the consequences of a debt of one hundred millions. . . . I have been pretending to shew how they may go on in a perpetual chain. . . . How to determine the exact extent of public credit. The solution of which is, That it is not necessary that public credit should ever fail, from any augmentation of debts whatever, due to natives."
2. Ibid., p. 626.

succeed in practice[3] and that bankruptcy can be excluded as a possibility. The extent to which debts can be increased depends greatly upon how far the people are willing to go along, and how the various groups are likely to react.[4] The expansion of public debts and the transfer of property which it involves may disturb the tranquillity of the state. Increased "beyond due bounds" they may harm the interests of the proprietors and thus force the state to adopt "the fatal expedient of a spunge." On the other hand, "if the spirit of the people prove compatible with the system of borrowing and supporting public credit to the utmost extent,"[5] such an outcome is not necessary.

If bankruptcy should occur, particularly as the consequence of a decay in trade or a disturbance in the collection of revenue, it would have the effect, according to Steuart, "of plunging the nation into utter ruin at home."[6] The creditors would become poorer, consumption and demand for work would be proportionately diminished, and trade would suffer, not only directly, but also indirectly, because of the blow dealt to private credit. The abolition of taxes which goes with it will not bring the expected and desired results, namely, relief to the taxpayer. On the contrary, because of the decline of expenditures and consumption, everybody would be worse off, and trade and industry would suffer correspondingly.[7]

The same devastating effects would result from a bankruptcy purposely brought about by the state. It is impossible for any statesman to foresee and provide for all the consequences of such an action in his attempts to soften the blow to the economy. The

3. Ibid., p. 455: "The whole of this hypothesis is, I readily agree, destitute of all probability; because of the infinite variety of circumstances which may frustrate such a scheme. I only introduced it to shew where the constant mortgaging of a public revenue may end; and to disprove the vulgar notion, that by contracting debts beyond a certain sum, *a trading nation which has a great balance in its favour*, must be involved in an unavoidable bankruptcy. To say that a *nation* must become bankrupt to itself, is a proposition which I think implies a contradiction."

4. Ibid., p. 350: "If, all the interests of the state duly considered, that of trade be found to predominate, less inconvenience will be found in allowing the money'd interest to swell: but in monarchies, where the landed interest is the most powerful, it would be dangerous to erect so formidable a rival to it."

5. Ibid., p. 626.

6. Ibid., p. 458.

7. Ibid., p. 460: "To say all in one word, a total bankruptcy, and abolition of taxes, would bring this nation back to the situation it was in before taxes and debts were known."

interests of all the groups in the economy are much too closely interrelated. Steuart rejects Hume's argument that the adverse effects of a voluntary bankruptcy could be limited to the creditors as fallacious and unrealistic. He concludes:

I should rather prefer to submit to the natural consequences which might result from an accidental bankruptcy, than endeavour to avoid them by a plan too complicated for human wisdom to execute.[8]

Although Steuart is optimistic with regard to the danger of state bankruptcy due to an increase of internal debts, he recognizes that it might result from foreign debts. This would come about primarily as a consequence of expensive foreign wars, resulting in a continuous drain of resources from the indebted country unable to export commodities in sufficient amount to offset imports and loan charges. Public credit "must fail, so soon as the nation becomes totally unable either to export commodities equal to all their imports and foreign debts, or to pay off a proportional part of their capital, sufficient to turn the balance to the right side."[9]

Balance of trade and foreign indebtedness must therefore be weighed carefully against each other.[1] The most important steps in a prudent debt administration, according to Steuart, are to repay the debts owed to foreigners as soon as possible, and to scrupulously observe the terms of agreements incurred with other nations. Only if this is done would it be possible to obtain assistance from other nations, if bankruptcy should threaten from "natural causes."

Steuart thus distinguishes between the effect of external and internal public debts and suggests the possibility of different policies in the two cases. On this point, also, he disagrees with Hume and Smith, who held the view that there was no difference between the two kinds of debts in their adverse effects upon the economy.[2]

8. Ibid., p. 459.
9. Ibid., p. 463.
1. Ibid., p. 635: "From this reasoning we may conclude, that the method of determining the exact extent of public credit, is to keep a watchful eye upon the increase of debts due to foreigners, and to compare these with the favourable balance upon the trade of the nation. When those debts and this balance begin to draw near to an equality, if part of the capital of the public debts be not immediately paid off, by an augmentation upon public contributions, the infallible consequence will be state-bankruptcy."
2. Smith, op. cit., p. 879: "But though the whole debt were owing to the inhabitants of the country, it would not upon that account be less pernicious."

III. British and French Credit in the Eighteenth Century

Despite Steuart's optimistic outlook concerning the consequences of a continuous debt increase, history has often demonstrated that even internal debts can lead to bankruptcies and repudiation. In the light of these facts Steuart's description of the continuous flow of income between various groups without endangering the stability of public credit may seem a little artificial and unrealistic. He does not claim, however, that the dangers of internal bankruptcy can be eliminated without positive action on the part of the state. In one of the most revealing parts of his analysis he discusses the conditioning factors which account for the steady growth and supremacy of Britain's credit during the eighteenth century. Prudent and skillful debt management, enlisting the interest of wide groups of the population in their country's credit, made British credit what it was.

In an illuminating comparison between the British and French credit Steuart shows how imprudent and reckless debt management reversed the relative financial position of the two countries within less than a century, giving Great Britain a definite lead and making it imperative for France to radically revise her credit policy if she ever wanted to recapture her important position in international affairs. In the light of this analysis one could almost assert that debt management has made or unmade great nations.

Up to the time of the British Revolution (1688), France enjoyed a much more favorable financial position than Great Britain.[3] In Richelieu's time trade and circulation had made much greater progress in France than in England in Davenant's day, and the revenue left by Henry the Fourth was twice as large as that of England at the time of the revolution.[4] The value of her coin circulation had been maintained fairly constant for a considerable period of time, and Steuart praises Richelieu for his grasp of the principles of good debt management. Despite its earlier origin,[5] however, French public credit fell hopelessly behind British credit, as soon as the latter was put on a solid footing.

3. Steuart, op. cit., Vol. II, p. 378: "Let any man, acquainted in the least with the history of England, examine the fixed revenue there, . . . down to the revolution; and they will evidently see the great disproportion of wealth, proceeding from taxes, in the one and the other kingdom."

4. Ibid., p. 377.

5. Loc. cit.: "Borrowing also, upon a fixed and permanent interest, had been known in France so far back as Francis the First."

Steuart believes that an important reason for the contrast in the development of public credit in the two countries was their different forms of government:

As long as the constitution of the two governments shall stand as at present, Britain will constantly have the advantage in borrowing: France will have it in paying off her debts. It is this contrast which engages me to enter into the following detail. I consider it not only as a piece of historical curiosity, but as a subject of profound reflection, from which much instruction may be gathered.[6]

In Great Britain the limited form of government "prevented the violent proceedings between ministers and public creditors, which were common in France; and this circumstance contributed, no doubt, to establish the credit of the former upon the better footing."[7] Furthermore, the responsibility of the ministers to parliament prevented violations and breach of faith, acts common in the French history of public credit. However, the form of government does not itself necessarily incline public credit one way or the other. At times French credit was in a very strong and sound position.[8]

A more basic reason for France's credit troubles was that the creditors and the people did not have confidence in the country's credit standing. Public credit was still looked upon in the same way as private credit, and suspicion was increased by the unscrupulous way in which the monarch handled the debt. There was no feeling of the community of interest and the common benefit which would be derived from a strong public credit and a wide distribution of public debt holdings. But this, according to Steuart, is an essential condition for the development of public credit, which he defines as "the confidence reposed in a state, or body politic, borrowing money, on condition that the capital shall not be demandable."[9]

This confidence was carefully nurtured and strengthened in Great Britain by a most careful policy of debt management. In France, on the other hand, the prime postulate was completely disregarded; arbitrary acts of repudiation were common. Had

6. Ibid., p. 367.
7. Ibid., p. 358.
8. Ibid., p. 107: "On the other hand, the rapid progress of credit in France before the Mississippi, and the stability of it from 1726 to the year 1759, abundantly proves, that nothing is more compatible than monarchy and confidence."
9. Ibid., p. 349.

France adhered to the same policy as Great Britain, namely, "that the public faith pledged to her creditors to be inviolable", her public borrowing program might have been just as successful. Steuart gives two illustrations to prove his point.

The monetary scheme which John Law introduced in France met at first with great success. Law took over the discredited government obligations and insisted upon punctual payment of interest. The money which he advanced to the customers of the bank upon "every species of good security" filled a great need and put French industry to work. He established credit and confidence, and this in turn brought back into circulation all the coin which had previously been hoarded.[1] French industry and trade prospered. The situation was favorable for a gradual paying off of the public debt. It was only when the Regent took the arbitrary step of reducing the value of paper money that the whole scheme, which was based upon *"the confidence which the public had had in the state,* which is what we mean by *public credit"*,[2] collapsed.

Again, after the war of 1748 a *caisse d'amortissement,* or sinking fund, was established in France to provide for the repayment of those sums which the bankers had advanced to the King during the war. A lottery system was set up and the fund was financed by a special revenue, the twentieth penny (one shilling in the pound). In 1759, however, the fund was discontinued, thus giving a "mortal blow" to French credit.

The absence of a large mercantile and trading class, which in Great Britain was the main support and beneficiary of government credit, made it more difficult to find a ready market for public securities in France. The King had to rely on a few bankers and financiers, who in turn borrowed the money for him. Their position was more secure because financially the King was absolutely dependent upon them. He could not afford to lose this source of credit. Since they made enormous profits on their transactions, the King in clearing his accounts with them resorted to various arbitrary methods to reduce his debts. Still, he usually left them enough to repay their creditors.

The French tax system was also very burdensome and its

1. Ibid., p. 615: "This effect was produced by an inconsiderable sum of notes: they did not exceed three millions sterling when Law gave up his bank."
2. Ibid., p. 285.

administration vexatious, two further reasons for the precarious-
ness of the public credit. The oppressiveness of the tax system was
in part a consequence of an inadequate monetary circulation.
Attempts to establish a sound paper credit had met with only
temporary success; no institution comparable with the Bank of
England regulated the money stream in France. This put France
in a weak financial position, particularly during war time. Her
coin would leave the country or go into hiding, aggravating con-
siderably the problem of raising sufficient revenue.

French revenue, as the result of the bickering between the
King and Parliament over alternative plans for raising the addi-
tional money, was derived during the eighteenth century war years
mainly from a double-poll or capitation tax and an increase of the
tax on possessions, the *dixièmes* and *vingtièmes*. This system of
taxation was inequitable and oppressive, and the necessity of
removing these taxes immediately upon the return of peace made
it impossible to use their yield for the repayment of the debt
accumulated during war time.

Their burdensomeness was further increased by the indirect
method of tax collection. The prospective yield of the taxes was
advanced to the King by the tax-gatherers, to whom the revenues
were mortgaged in return. Already Richelieu had complained
bitterly about their extortionist practices. Although by agree-
ment with the King the tax-gatherers were supposed to earn only
a fair return upon their advances, they actually plundered the
country to the limit. To prevent inspection by the King they
used to burn their books at the end of the year. In Steuart's
time this situation had considerably improved, but such a system
proved extremely costly.

The comparative ability of two nations to raise extraordinary
revenues in case of need is, according to Steuart, the best indication
of the state of their credit. In this respect Great Britain was at a
decided advantage. The establishment of a sinking fund as part
of her debt management policy proved very valuable in cases of
urgent need for additional revenue. The existence of a sinking
fund, on which the Government could fall back to meet emergen-
cies, afforded time to decide on the kind of taxes which could be
imposed with the least inconvenience to pay for the service charges
on the new loans. For this reason they did not have to be removed
upon the return of peace, but could be retained as a permanent

addition to the revenue of the country. Thus they provided an additional fund of credit to Great Britain. The *dixièmes* and *vingtièmes* and the double-poll tax, on the other hand, which the French levied, could not, because of their purely temporary character, be used to strengthen France's credit position.[3]

Thus Steuart considers the sinking fund a useful instrument for strengthening confidence in the public credit, making it possible for the Government to borrow upon favorable terms.[4] He is not much concerned about the danger, strongly emphasized by the classical writers, of its being abused and actually promoting wars by putting a ready fund at the disposal of the Government. He recognizes that the abolition of the sinking fund will not prevent wars; it will only make it more difficult and costlier to raise revenue, when the need for it arises.

Steuart realizes that the sinking fund may be used for current expenditures rather than for the service of the public debt. Powerful interests in the economy may get together and force the Government to reduce taxes or prevent their increase, thus making it necessary to apply the fund for current expenditures.[5] To minimize the danger of such abuses during peace time, Steuart is in favor of having the revenues for the sinking fund appropriated in such a way "as to put it out of a nation's power to misapply them."[6] In view of previous statements this suggestion must be interpreted rather flexibly. As a step in the right direction, Steuart proposes a clear distinction between the revenue appropriated for current government expenditures and that which should be set aside for the service of the public debt. "This however I apprehend is too much neglected in both kingdoms."[7]

The precariousness of the French credit expressed itself in

3. Ibid., p. 439: "Those extraordinary resources of France cannot be mortgaged. They are supplies for the current service; but they are no fund of credit. Whereas the sinking fund of Great Britain is always ready in the mean time to supply urgent demands."

4. Ibid, p. 467: "The method, therefore, of borrowing money to the best advantage, is previously to establish a fund of credit, arising from annual taxes; to provide the people who are to pay them with money in proportion to their property or industry; and to prevent the latter from ever failing for want of the medium, money, for carrying it on."

5. Ibid., p. 392: "Such combinations must occur, and frequently too, in every state loaded with debts, where the body of that people, the landlords, and the creditors, find an advantage in the non-payment of the national debt."

6. Loc. cit.

7. Ibid., p. 438.

the high interest rate and the short-term borrowing which it made necessary. In Great Britain credit was firmly established, and the creditors were interested primarily in a stable return on their investment. In France, on the other hand, the creditors were interested mainly in a speedy repayment of the principal, and would not lend money upon perpetual interest. The prevalent way of borrowing was therefore upon life annuities at ten per cent, with a lottery clause which stipulated that a large sum would be paid annually for extinguishing the capital. And Steuart comments, "The reason is, she is more punctual to such engagements." The creditors, under these terms, were in a position to control the government operations more closely and keep a watchful eye. Besides, they considered their investment as constantly being returned to them. On the other hand "when funds are settled at perpetual interest, people lose sight of the capital altogether."[8]

. Comparing French and British debt practices Steuart concludes that Great Britain, because of her limited form of government and sober debt administration, was definitely in a better position for contracting new debts, while France, because of her arbitrary practices, had the advantage with regard to debt repayment.[9]

In one of his most illuminating statements Steuart warns, however, against rash conclusions from this contrast in debt administration.[1] The scrupulous adherence to the terms of public commitments in England created such an exacting and sensitive credit that the smallest deviation from its principles could prove fatal to the whole system.[2] Such manipulations would not necessarily lead to the breakdown of French credit, on the other hand.

8. Ibid., p. 440.
9. Ibid., p. 628: "In France, the power of the Prince furnishes many expedients for paying off capitals, which had been borrowed at an exorbitant interest in times of public distress.

"In England, the limited power of the crown, and the responsibility of ministers for their exercise of it, is a great security to those who lend money to the state; and consequently, proves a very great advantage in contracting debts upon reasonable terms."

1. Ibid., pp. 378–379: "Had one half of the acts of power been exerted with us, which have been so familiar in France: had half the liberties been taken, in tampering with the claims of creditors; a total bankruptcy would long ere now have been the consequence: but in Britain credit is young; and has been tenderly reared. In France she is old, and has been accustomed for many ages to rougher usage."   .
2. Ibid., p. 628.

They might "throw a damp upon it for a time," and "may cost her very dear," but the people in France seemed to have become conditioned to them. To them the "credit of Great Britain must have appeared . . . in the light of a pettish child, educated in the house of a too indulgent parent."[3]

However, it did not follow that France should take comfort from this contrast. The mere fact that Great Britain has achieved such a high standard of debt management made it impossible for France to go on in her irresponsible fashion. Thus the progress of one country in its use of public credit gives her a financial superiority which forces other countries to improve their own system. This is particularly true in time of war.[4] The growth and development of public credit in one country will not, as Hume had claimed, mean inevitable abuses, bankruptcy, and "poverty, impotence, and subjection to foreign powers." On the contrary, it is the country which refuses to respond and make full and prudent use of its public credit which will have to face such an alternative. But its bankruptcy then will not have been unavoidable, but of its own choosing! Hence Steuart concludes:

It is folly to prophecy, I know; but I may be allowed to conjecture, that the same causes which have raised the credit of this nation to such an amazing height, will either force the French from their old principles, or they will, some time or other, bury her credit in the dust.[5]

IV. The "Evolutionist Approach"

We have seen that Steuart had a remarkable insight, far more penetrating than that of his contemporaries, enabling him to grasp the significance of current trends to which they were blind. The vitality of his analysis is still, two hundred years later, corroborated by the course of events — those same events which have consistently refuted the conventional views of his day. Thus we may call his method "dynamic," as opposed to the more static approach of the classical writers. In order to make his analysis of the public debt really useful and pertinent to modern discussion, however, it is necessary to go behind the term "dynamic," and try to

3. Ibid., p. 379.
4. Ibid., p. 359: "As long as nations at war observe the same policy in their methods of raising money, the ways in which they proceed are of the less importance: but when any one state makes an alteration, by which more money is thrown into their hands than they could formerly obtain; this circumstance obliges every other state to adopt the same method."
5. Ibid., p. 378.

ascertain the significance of his historical perspective — to seek the essence of what Grossman has called Steuart's "evolutionist approach" to economic analysis.

This involves, first of all, *studying an institution within its context*. Steuart consistently related issues to their broader economic and social framework, and appraised policies in terms of the particular setting. This was in marked contrast to the classical tendency to deduce from a very special set of circumstances principles of avowedly universal validity, regardless of time and place.

To Steuart no course of action with reference to the public debt was good or bad in an absolute sense; everything hinged on the environmental situation which conditioned, and in turn would be influenced by, the policy decision. A program of continuous expansion of public credit would be feasible only under certain favorable circumstances. There should be a strong commercial class interested in the safe investment outlet which government securities provide, an effective banking system necessary to provide for adequate circulation, and a tax system so adjusted to the economy as to minimize interference with industry and trade.

The political structure most favorable for forceful government credit policy was one in which the Government was responsible to the people, and in which political participation by all social classes on a broad basis ensured that government measures reflected and reconciled the interests of the various groups. Above all, the people had to have faith in their Government; fundamentally, public credit rests upon popular confidence, and the attitude of the people is thus of primary importance. The statesman "ought carefully to attend to the spirit of the nation he governs, before he gives way to a regular and systematical augmentation of public debts."[6] Such confidence must be constantly nourished and reinvigorated through a policy of careful and prudent fiscal administration, and integrity in international transactions.

Steuart is careful not to claim that expansion of public credit must invariably prove beneficial to the economy. He explicitly recognizes limiting circumstances, and the very real possibilities of abuse. On the other hand, he refuses to reject an important instrument of economic progress merely because it is open to abuse; he prefers rather to point to the dangers, indicating at the same time how they can be averted.

6 Ibid., p. 626.

A second characteristic of the "evolutionist approach" is that it explicitly takes into account the fact of constant *change in the institutional context.*

The classical economists failed to see that the needs of a new and growing industrial and commercial middle class required a sound public credit; that the growth in wealth and income and an improved tax system made it much easier to support the growing debt; and that an adequate banking structure facilitated the channeling of funds between individuals and the government, allowing for much greater flexibility in debt management.[7]

Especially mistaken was the appraisal by the classical economists of the political trend of their time. The same current of laissez-faire liberalism which rejected Steuart along with mercantilism accounted for the individualistic anti-state bias which blinded orthodox theory to the necessary and positive economic rôle of the Government. They were unable to grasp what Steuart saw so clearly — that the steady development of democratic forms was giving the people a stake and voice in the Government which in itself constituted the primary guarantee of responsible and non-arbitrary public debt management, and provided strong safeguards against the debt abuses of an earlier period.

It is not mere description of change, however, that makes analysis dynamic. The really pragmatic and constructive theorist goes still further, to demonstrate that *current policies are themselves instruments of change.* In examining the historical development of the government debt, Steuart stresses not only the extent to which the public credit is dependent upon prevailing circumstances, but also that it has, in turn, been pivotal in furthering social evolution and progress, and thus molding those circumstances. This is why he insists that it is the task of the statesman both to adapt to the spirit of the day and at the same time take measures to modify these views:

The great art therefore of political œconomy is, first to adapt the different operations of it to the spirit, manners, habits, and customs of the people, and afterwards to model these circumstances so, as to be able to introduce a set of new and more useful institutions.[8]

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7. Cf., on the other hand, Steuart, op. cit., Vol. II, p. 443: "Europe was possessed by our ancestors free from taxes; our fathers saw them imposed, and we see how fast they become mortgaged for our debts. We can as little judge of the extent of our credit, as they could of the possibility of contributing so large a fund for the support of it."

8. Ibid., Vol. I, p. 2.

Steuart may have gone too far in ascribing omniscience to the statesman, but his approach seems certainly more constructive than the classical negation of the rôle of the state and the fiction of non-intervention. More than any of his contemporaries Steuart was aware of the forces which make for progress, and likewise of the potentialities of organized group action for controlling and guiding these forces in the desired direction.

V. Conclusion: Steuart's Position

The question arises whether this method of "enlightened optimism" — of stress on the continuous process of adaptation to, and modification of, institutional factors that are in ceaseless flux — can arrive at any useful or valid scientific principles. Grossman has pointed out that "the particular task of the social sciences is . . . not to seek for eternal laws, but to find the *law of change* itself"[9]; and Steuart has demonstrated that such laws of change can reveal underlying relationships that are meaningful anywhere at any time, and that serve to bridge the gap between theory and history. The most important of his guarded and inductive generalizations are relevant to modern public debt discussion, and deal with some of the vital problems connected with it. A brief summary sketch of his position should substantiate this point.

Like many outstanding modern writers, Steuart was primarily concerned with the over-all income flow — the problem of distribution. He believed that at times, without positive state measures to stimulate consumption and to open investment outlets, the productive stream in the economy might stagnate, and that the accumulation of idle pools of purchasing power could only result in deflation. His contemporaries charged him with being, like the mercantilists, more preoccupied with monetary than with real phenomena. What they failed to understand was that in the absence of full employment, which they implicitly assumed, velocity of circulation can actually cause trouble; it is only when the monetary stream is full and adequate that it does not constitute a problem.

Thus Steuart sees it as the function of the state to draw stagnant funds out of hoards, via taxation or public borrowing,

9. H. Grossman, "The Evolutionist Revolt Against Classical Economics, I," Journal of Political Economy, October, 1943, p. 386. (Italics added.)

and channel them into useful and productive government expenditures, thus ensuring that the income flow will complete its circuit. This should be done out of regard for the general economic welfare; the interests of the many are not automatically harmonized with those of the few or the individual, but only through deliberate social control. In practice, interventionism is not new or renascent; even after the mercantilists it continued, despite the proclamation of the laissez faire doctrine, to be a vigorous and growing social force.

This concept of the public debt as one of the state's devices for facilitating the transfer of funds between groups in a society shaped Steuart's position on the issue of repayment and debt limits. It enabled him to see what is so widely stressed today, that continuous debt increase does not have to end in bankruptcy, since the funds are funneled right back into the economy.

At the same time Steuart did not let his over-all approach blind him to the differential impact upon the various groups affected; hence his emphasis on the need to respect the "spirit of the times," and to carefully nurture popular confidence in the public credit. Even today we often have to be reminded that a great deal hinges upon "how people feel" about the public debt, and that the real limits to its expansion are psychological and social, rather than economic.[1]

Steuart's reasoning is often obscure and confusing, his style heavy and pedantic, and his conclusions not so clearly and precisely stated as those of orthodox writers. He is also much less dogmatic and self-assured. This is partly due to his persistence in making only limited generalizations, and always relating them to the historical and institutional framework. One consequence is that he was neglected by his own and following generations. Another more important consequence is that, because of this very unwillingness to abstract from time and place, he has much to contribute to modern analysis of a problem which continues to be of paramount significance.

<div align="right">WALTER F. STETTNER.</div>

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1. Steuart, op. cit., Vol. II, p. 442: "This is a very rational conclusion from past experience; but it is only relative to the circumstances of past times. While the debtors are the masters, there is no difficulty of getting clear of debts: but if the consequence of this new system should be to make the creditors the masters, I suppose the case might be different."

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Since Lorwin-Wubnig's[2] masterful study on the history of the National Labor Relations Board there can be no doubt that the War Labor Board of World War I had important effects upon the further development of American labor relations. World War II's Board may reasonably be expected to exercise an even greater influence upon postwar industrial relations. The present Board, with all its regional boards and commissions, together with its predecessor, the National Defense Mediation Board, has not only lasted longer than the Walsh-Taft Board, but it has also rendered ten times as many decisions. These decisions, moreover, have dealt with a far greater variety of problems,[3] and they were rendered a quarter of a century later in the development of labor relations. Compared with other countries it is, of course, true that our labor relations in 1941–42 were still in a stage of immaturity, but this stage was certainly greatly advanced over the level of 1917. It seems plausible, therefore, that this Board's decisions should have a greater influence upon a wider range of problems.

This broad statement must, however, be immediately narrowed. From our experience with the old War Labor Board and the Boards of the N.I.R.A. period, it appears that only those rules have a chance of survival which represent a continuous development and do not constitute a direct breach with industrial experience. The Board has therefore consistently shrunk from making innovations.[4] Against the dissenting vote of its labor members, the ordering of military severance pay was steadfastly refused. Employees and unions are free to agree upon such a provision, but its inclusion in the written contract will not be ordered.[5] The same aversion to venturing into new fields can be

2. Lewis Lorwin and Arthur Wubnig, The Labor Relations Board, Brookings Institution, Washington, 1935.

3. The N. W. L. B. in World War I decided in 16 months 1,052 cases affecting 711,500 workers (Bull. of the U.S. Bureau of Labor Statistics No. 287, 1921, pp. 12, 20), while the present Board, between January 12, 1942, and October 27, 1944, decided 11,118 disputes involving 7,700,000 employees, and between October 3, 1942, and October 27, 1944, stabilized wages in 305,524 voluntarily submitted cases involving more than 15,000,000 employees. (B-1918, January 15, 1945.)

4. A partial explanation of this attitude can be found in Sec. 7, War Labor Disputes Act, which limits the power of the Board to decide disputes concerning wages, hours, and those terms and conditions which are "customarily included in collective-bargaining agreements."

5. American Brake Shoe Foundry Co., Case No. 111-1490-D, June 21,

seen in the question of guaranteed (annual or weekly) wages,[6] sick-leave,[7] and compulsory group insurance.[8]   If it is the policy of the Board to base its orders only upon those well-established provisions which long years of experience with collective bargaining have made the body of what Professor Slichter calls the system of industrial jurisprudence,[9] how can its policy affect the further development of this system at all, one may well ask.   By lending its authority to some provisions, by modifying or discarding others, by testing the usefulness, the limitations, and the assumptions of certain procedures, it has speeded up and furthered the development of our knowledge of labor relations to such an extent that the postwar period can build upon a basis which will be further advanced than that of 1941.

The importance of the War Labor Board goes further, however, than a deepening of knowledge.   The solutions found in the Board's approach form a new body of law, the Common Law of Industrial Relations. While in peace time employers, workers, and their organizations are free within the framework of federal and state law to adjust their respective rights and duties by agreement, this freedom is severely curtailed in war time.   The terms of the bargain are no longer merely a result of the decisions of the parties, but are to a large extent determined by the Board's orders.   These enforceable decisions establish norms; they form a body of law.   In this body of law all the characteristics of a common law[1] are realized.   The Board follows the rule of judicial

1944; Automatic Transport Co., 8 WLR 1; Riverside and Dan River Cotton Mills, 8 WLR 274; but: Anaconda Copper Mining, Case No. 42118-CS-D, August 27, 1943; New England Shipbuilding Corp., Case No. 111-1014-D, November 24, 1943.

6. General Electric Co., Case No. 111-8214-D, September 20, 1944 (B-1756).   In the Basic Steel decision case No. 111-6230-D, November 25, 1944, the WLB recommended to the President the appointment of a commission for the study of this question on a national scale.

7. Bay District Ice Cream Manufacturers Asso., Case No. 111-5963-HO, September 13, 1944; Report of the Steel Panel, Case No. 111-6230-D (14-1 et al.), Public Members, p. 173; Blue Bird Potato Chips, Inc., Case No. 111-5941-D, October 30, 1944.

8. Steel Panel, Report of the Industry Members, pp. 51, 52; Assoc. Fur Coat and Trimming Manufacturers, Case No. 111-6849-D, December 11, 1944; Basic Steel Case, see note 7 supra.

9. Union Policies and Industrial Management, Brookings Institution, Washington, 1941, Ch. I.

1. Roscoe Pound, The Spirit of the Common Law, Boston, 1921, and his article, "Common Law," Encyclopedia of the Social Sciences, Vol. 4, p. 54.   George W. Taylor, speech May 20, 1942.   Kurt Braun, The Settle-

precedent. Trial by jury takes the form of the tripartite organization of the National and Regional Boards and their panels and commissions.[2] The doctrine of the supremacy of law is expressed in the rules governing the appeal against the decisions of subordinate organizations, which show that these subdivisions are bound by the Washington Board's policy.[3] Admittedly the Washington Board is the Supreme Court of Labor. Like the King's court in medieval England, the Board selects the best of all the innumerable industrial customs, operative usages, and industrial practices which the parties have elaborated in thousands of widely dispersed collective bargaining agreements and develops them into a set of uniform principles and rules on a nation-wide scale.[4]

When, after the transition to a full peace-time economy, this new common law disappears from the American scene, together with its source, the War Labor Board and its enforceable decisions, postwar labor relations will benefit from this unique phase of development, in which a national law crystallized from its amorphous elements. Some of the rules of the wartime common law will live on in federal or state statutes, others will be annulled in this fashion. The majority of these rules, however, will revert to their prewar status. They will form the new, uniform and improved customs and usages of Professor Slichter's System of Industrial Jurisprudence.

In peace time the industrial community looks upon these principles and rules as their law. True, it is unenforceable law,

ment of Industrial Disputes, Philadelphia, 1944, p. 120: ". . . arbitration agencies will have to create a new law by themselves, the labor law of the future."

Although the decisions of the Board were held only informatory and at most advisory (but not enforceable) in Employers Group of Motor Freight Carriers, Inc. v. N. W. L. B. 143 Fed. (2). 145 (certiorari denied) and in spite of the fact that the Federal district court of Chicago in the Montgomery Ward case considered the President's seizure order as not covered by the War Labor Disputes Act or the U.S. Constitution (N. Y. Times, January 28, 1945), its orders have been enforced so far through governmental seizure in 25 cases (NWLB-OWI Release January 15, 1945, B-1918). It is generally believed that the Board's directives will continue to be enforced and that Congress will provide legal basis for it in case the Montgomery Ward decision should be upheld by the Supreme Court.

2. Kurt Braun, op. cit., p. 138
3. Rules for Organization and Procedure, August, 1944, Sec. IV, 2.38.
4. War Labor Disputes Act, June 25, 1943, Public Law 89, Ch. 144, 78th Congress, 1st session. Sec. 7a (1 and 2).

· a *lex imperfecta.* The "industrial law," as I venture to call it, shares this defect, together with many other characteristic qualities, with international law.[5] Like states, employers and unions are sovereign in their dealings, as long as they comply with federal and state law; the rules governing them, like the rules of international law, rest partly on the assent of the parties and partly on generally approved practice. Their sources are also "usages, giving rise to custom or positive agreements or treaties." And like international law, industrial law becomes a binding body of objective law after it has, by time and experience, acquired general recognition and application by tribunals.[6]

The Board's rules and principles contain, however, only the germs of future possibilities. Some will grow into sound organisms, others will fail to develop. What this article attempts to do is to trace those rules and principles of the Board's common law of industrial relations which may, perhaps, be expected to survive this war, either in the form of statutory labor law or as rules of peace-time industrial law.

COLLECTIVE BARGAINING

The mere existence of an elaborate compulsory arbitration machinery would ordinarily tend to weaken collective bargaining as a means of settling disputes.[7] The War Labor Board has, however, tried to strengthen this most important institution in American labor relations by all possible means. Not only has the Board repeatedly stated that arbitration is no substitute for collective bargaining,[8] but in several instances the parties have been *ordered* to bargain.[9] Disputed questions have been referred

5. John A. Lapp, "Labor Arbitration," National Foremen's Institute, Inc., 1942, p. 9.

6. Edwin M. Borchard, "International Law" in Encyclopedia of the Social Sciences, Vol. 8, p. 167. See also Article 38 of the Statute of the Permanent Court of International Justice, quoted in J. L. Brierly, The Law of Nations, Oxford, 1942, p. 46.

7. Morton Steinberg, "Federal Control of Collective Bargaining," Illinois Law Review, November-December, 1943, pp. 128–166.

8. Yellow Truck and Coach Mfg. Co., Case No. 383, December 14, 1942; Federal Shipbuilding and Drydock Co., Case No. 25–390-D, September 15, 1943; Simon J. Murphy Co. et al., Case No. 111–1228-D, October 26, 1943; Aluminum Co. of America, Case No. 111–18, November 27, 1943. See also speech of Lewis M. Gill, September 12, 1944, B-1743.

9. See the cases in which employers were ordered to bargain with unions certified by the N. L. R. B.; e.g. Ohio Public Service Co., Case No. 169, July 31, 1942.

back to them[1] and the sanctity of contract has been anxiously guarded.[2] All this at a time when collective bargaining was leading an anemic and precarious existence, since the determination of the basic wage rate and of the basic hours of work had become largely a matter of law and was no longer subject to the bargaining process. In spite of this, the institution of collective bargaining not only is surviving but appears stronger and more comprehensive in scope.

Both the number of collective bargaining agreements and the number of workers covered by them have markedly increased.[3] This is understandable in the light of the increased war-time employment and the growth of union organizations. Based on the security which the War Labor Board's maintenance-of-membership clause provided, unions could expand their organizing activities among the growing and changing labor force. This increase in union strength was, on the other hand, one of the major factors leading to stronger employer organizations. Already in the early days of the National Defense Mediation Board, Chairman Davis advised the employer to follow the example of his men and combine with his fellow employers in trade associations.[4] An important part of postwar collective bargaining might, therefore, be carried on by giant powerful organizations of labor and capital. That such a development is fraught with economic

1. The question of whether a departmental or a plantwide seniority clause should be included in the collective bargain was referred back to the parties in American Magnesium Co., Case No. 33, August 18, 1942. The problem of the apparent refusal to render a decision in face of the mandate in Executive Order 9017 and War Labor Disputes Act to *settle finally* all disputes which may lead to a substantial interference with the war effort was solved by the W. L. B.'s declared readiness to decide the cases, if no agreement could be reached by the parties. See also Glenn L. Martin Co., Case No. 111-7696-D, October 21, 1944; Cramp Shipbuilding Co., Case No. 111-8598-D, January 15, 1945.
2. Tennessee Coal, Iron & Railroad Co., Case No. 465, October 24, 1942; Kosmos Timber Co., Case No. 111-1430-D, November 9, 1943; 26 Great Lakes Steamship Cos., Case No. 111-2227-D, February 9, 1944. A collective bargaining agreement will be upheld even if it deviates from established W. L. B. policy (except if violating the wage stabilization program); equal pay for women principle subordinated in Houston Bakeries, Case No. 111-2508-D, December 22, 1943; the Board's policy to deny retroactivity of wage awards to striking unions is subordinated in Teaford Danches Co., Case No. 111-2188-HO, July 11, 1944.
3. "Extent of Collective Bargaining and Union Status, January, 1944,' 58 Monthly Labor Review, No. 4, pp. 697ff.
4. Address, October 30, 1941.

and political danger, that group conflicts carried on before a hostile society may lead to a suppression of the group, its rights and those of its members, is generally admitted.[5]

With the appearance of larger and more extensive employer and employee units, the *geographic scope* of the collective agreement tends to spread. Some collective contracts now govern whole areas, regions, and even entire industries.[6] In the future the

5. Henry C. Simons, "Some Reflections on Syndicalism," Journal of Political Economy, March, 1944, pp. 2ff. For a far more balanced discussion within a greater framework, see Joseph A. von Schumpeter, Capitalism, Socialism and Democracy, New York, 1942, pp. 139ff.

6. Whole regions are covered by decisions like the following: Atlantic and Gulf Coast Shipbuilding Cos., Case No. 111-4743-D, July 28, 1944; Atlantic Coast Wage Cases, Case No. 9008, April 4, 1944, B-1439; 15 Gulf South Atlantic Coast Cases, Cases 25-41, 25-54, 111-2170-D (25-319-D), July 31, 1944; New York Milk Distributing Cos., Case No. 2-20027, February 14, 1944.

Entire industries are affected by some decisions. For the steel industry see O. W. I. release of March 22, 1944, B-1387-C; Atlantic Steel Co., Case No. 111-366-D, June 21, 1944. For other industries see Textile Industry, March 29, 1944; Bituminous Coal Operators, Case No. 13-351, May 19, 1944; Pressed and Blown Glassware, August 4, 1944; Non-ferrous Metals Opinions, Case No. 111-4465-D, September 16, 1944; Soft Shoe and Slipper Industry, Case No. 111-1146-D, December 7, 1943; Amalg. Clothing Workers, Case No. 111-1641-D, December 9, 1943; Pittsburgh Plate Glass Co. et al., Case No. 2174-2175-C S-D, October 19, 1943. For a summary see Report of Steel Panel, Case No. 111-6230-D (14-1 et al), Public Members, pp. xxiv n., 196, 197, 216. Significant also are the cases where industry practice (night-shift differential) was also held the governing consideration as against local labor market or multi-plant company-wide usage; Globe Steel Tube Co., Case No. 111-849-D, February 14, 1944; Bethlehem Steel Co., Case No. 2752, May 28, 1943; Pacific Gas and Electric Co., Case No. 2438-D, September 28, 1943; Portland Traction Co., Case No. 111-643-D, December 20, 1943; Firestone Rubber and Latex Products, Case No. 2451-D, 2553-D, July 15, 1943; Kelly Springfield Engineering Co., Case No. 111-453-D, August 26, 1943.

See also the W. L. B.'s commissions and panels which tend to establish basic uniform provisions for the entire industry, or industry in a particular region for which they serve: Wage Adjustment Board for the Building Industry (Gen. Order No. 13A), Shipbuilding Commission, Trucking Commission, Non-Ferrous Metals Commission, Steel Commission, Tool and Die Commission, Daily Newspaper Printing and Publishing Commission, War Shipping Panel, National Airframe Panel, National Telephone Panel, and West Coast Lumber Commission, West Coast Aircraft Committee.

In the 13 Wisconsin, Illinois, and Iowa Millwork Cos., Case No. 111-2356-D, October 27, 1944, industry members in their dissenting opinions protested the placing of the disputes of all thirteen companies before one national panel. They were fearful of the union's plan to "corral these companies in one major contract and also to have one termination date for all contracts" in the absence of any previous joint collective bargaining.

nation-wide master contract on an industry basis may be the rule rather than the exception in all those industries which compete on the international or national market, leaving, however, a broad field for local bargaining in adjusting the master agreement to the needs of the individual enterprise. There will still remain numerous and important industries serving a local market which will continue to bargain on a purely local basis, in order to fit the collective contract better to the local labor market conditions. Stabilization Director Byrnes' Supplemental Directive of May 12, 1943, to Executive Order 9328 of April 8, 1943, which stresses the "sound and tested going wage rates by occupational groups and (local) labor market areas," as well as a number of decisions which base their wage orders or vacation provisions on local area rather than multi-plant[7] or industry-wide practice,[8] appears to contradict the major trend. But as Dean Garrison pointed out, the local area can determine the wage rate, and thereby the geographic scope of the collective bargaining agreement, only so long as the industry competing on a national market for its products is sure of a guaranteed (governmental) market. As long as it is competing in a tight local labor market for labor, it will be bound by local area practices. After the supply becomes more plentiful in the local labor market and restoration of a competitive product market is achieved, the individual firm will try to adjust its wage schedule and labor relations to conform with those which govern the rest of its competitors in the industry. In those cases where labor was already highly mobile,[9] the War Labor Board had to give up the wage brackets based upon the local-area principle in favor of industry-wide stabilization. The steelworkers' recent demand for "equal pay for similar work through the industry" indicates a powerful trend for industry-wide wage schedules and hence for industry-wide collective bargaining.[1]

7. Aluminum Co. of America, Case No. 111–18, November 27, 1943; North American Aviation, Inc., Case No. 8–8102, April 15, 1944; Gen. Refractories Co., Case No. 111–3297, 2967-D, May 5, 1944; Fairchild Engine and Airplant Corp., Case No. 111–4107-D, June 1, 1944; but see also Bethlehem Steel Co., Shipbuilding Division, Case No. 38, June 17, 1942.

8. Universal Match Corp., Case No. 2980, December 18, 1943.

9. In the matter of Brackets for Rigbuilders in the Petroleum Industry, March 23, 1944, B-1406.

1. Report of the Steel Panel, Case No. 111–6230-D (14–1 et al.), Pt. I. The Union's demand was denied by the Board in its decision of November 25, 1944, B-1851 with reference to the Byrnes directive.

For the significance of industry-wide wage schedules see S. H. Slichter, "Postwar Boom or Collapse", Harvard Business Review, Autumn, 1942, p. 5 ff.

The future may witness a further increase in industry-wide agreements in those industries for which they are applicable. Whether this development will sweep away the traditional regional differential cannot be conclusively answered in the light of a contradictory War Labor Board policy.[2] The wider coverage of the collective bargain may also have another effect. Although the Board carefully distinguished between the appropriate bargaining unit which is determined by the National Labor Relations Board and its own units created for the purpose of wage stabilization, the larger stabilizing units which cover whole industries[3] or all plants of a multi-plant company[4] are likely to produce an expansion of the bargaining unit in labor relations.

At the same time the content of the collective bargaining agreement also has expanded. The attempt to mitigate the rigidity of the wage stabilization program made the parties inventive. Their "inventions" were not restricted to the wage issue, but soon led them to submit to the Board a growing number of other issues upon which their interests centered. Only the most significant of those provisions which might be carried over into future labor relations can be recorded here.

The most important issue is still the wage issue. Labor and industry have been made conscious of intra-plant wage-rate inequalities.[5] *Job specification and classification,* which personnel

2. While some early cases, like Aluminum Co. of America, Case No. 66, February 10, 1942 (North-South differential), Gen. Motors Corp., Case Nos. 125, 128, 234, 240, 251 (differential between "Manufacturers" and "Job shops" wages for Detroit tool and die occupations), indicate a policy of narrowing this differential, the majority of the cases follow the Board's statement of wage policy of November 6, 1942: "Wage differentials which are established and stabilized are normal to American industry and will not be disturbed by the Board." Consequently the Board refused to abolish an inter-regional wage differential in Southwest Lumber Co., Case No. 111-6197-D, September 28, 1944. Not quite consistent and witness to the strong pressure of labor for "equal pay for similar work through the industry" is: In re Shirt Institute, Inc. et al., 13 WLR 81, which narrows the geographical differential. The elimination of a geographical wage differential was denied in the "Basic Steel" Decision, Case No. 111-6230-D, November 25, 1944.

3. Big Four Rubber Cos., Cases No. 2307-CS-7 et al.

4. Pacific Telephone & Telegraph Co., Case No. 3047, January 26, 1944; see, however, Mountain States Tel. & Tel. Co., Case No. 111-4732-D, October 24, 1944.

5. Unusual or unreasonable individual or occupational rate differences held a basis for wage rate increases in Executive Order 9250, October 3, 1942, Title 11 (4), Wage Policy statement of November 6, 1942, Act of October 2, 1942, Sec. 1, Executive Order 9328 of April 8, 1943, and Supplemental Direc-

managers have taught for the last thirty years and have succeeded in introducing in only a very few big enterprises in the face of the resistance of a sluggish management and distrustful labor, has now entered many plants and even whole industries. General Order 31 stresses the use of a schedule of wage rates or wage-rate ranges in connection with authorized plans for wage increases[6] in merit and promotion cases, which do not need W.L.B. approval. Labor, industry and the Board realized that "carefully defined job classifications and intelligible and well-balanced wage-rate schedules are needed, not only for good labor relations but for efficient production."[7] It is safe to assume that these scientifically established job classification schedules will be retained and kept up-to-date.

Postwar labor relations will have to follow the Board's example and eliminate another intra-plant wage problem, which exists where the proper balance between *office and clerical salary rates* and wage rates paid to production employees[8] is disturbed. The difference in the "take-home pay" between production and white-collar workers will probably assume an increasing importance in the period after the war. If the customary balance is not speedily restored, a serious situation may arise. Widespread dissatisfaction of the white-collar worker is a very powerful political agent, as the history of European Fascism shows.

Another personnel manager's dream, the spreading of *incentive wage systems*, now seems nearer to realization. Here labor's traditional misgivings led the Board to adopt a very cautious policy. It would adopt only those proposals which both parties (in exceptional cases the employer only) submitted to the Board.[9] Labor had made it clear that its changed attitude towards these plans depended upon a number of safeguards and was strictly

tive of May 12, 1943. See also the following cases: Aluminum Co. of America, Case No. 64, August 18, 1942; Chase Brass and Copper Co., Case No. 28; Gen. Motors Corp., Case Nos. 125, 128, 234, 240, September 26, 1942; Pacific States Cast Iron Pipe Co., Case No. 67; Boeing Aircraft Co., Case No. 557, September 4, 1943; University of Pennsylvania, Case No. 4265-D, August 26, 1943; Lorillard Co. (Master union contract), Cases 13–212, 13–286, 287.

6. Gen. Order No. 31, adopted May 26, 1943, repeatedly amended (August 18, 1943, October 8, 1943, etc.) lists the requirements of such a job classification plan. Wage increases which fall within such a schedule do not need Board approval.

7. Dean L. K. Garrison, address on January 12, 1944, B-1228.

8. Curtiss Wright Co., Case No. 2–3802, September 10, 1943.

9. U. S. Aircraft Corp., Case No. 1–5444, November 19, 1943.

limited to the war period.[1] Unions had a chance to get better acquainted with such plans, to study the possibility of joint operation, and to revise their points of view.[2] It is therefore probable that a great number of these wage systems will be continued into the period following the cessation of hostilities.

All these developments have one thing in common. They substitute rationalization of the internal wage structure for internal wage-rate anarchy. But a rational wage structure also takes into account differences between comparable job rates in other industries in the same local labor market, in other plants of the same multi-plant concern, and differences within the industry (on a regional, national, and even international labor market basis). Following the Supplementary Directive of Economic Stabilization Director Byrnes of May 12, 1943, the Regional War Labor Boards have accumulated a great number of wage data for specific key occupations in particular labor market areas and industries. The Bureau of Labor Statistics hopes to keep up these data in the postwar period for selected major industries. If such accurate information about specific wage rates and labor costs is available to the parties to the collective bargain, bargaining itself will become rational and objective. Since the parties will be able to foresee wage awards or mediation or conciliation proposals, all of them resting on published data, they will prefer to reach these conclusions among themselves. Collective bargaining would be further strengthened.

If the data of tested and going wage rates collected under the Byrnes Directive of May 12, 1943, is kept up-to-date, it will be furthermore of great value for wage orders which the Wage and Hour Administrator issues upon the recommendation of industry committees under Sec. 8, F.L.S.A. Since these wage rates were assembled for key occupations on an area basis, their upkeep would also greatly facilitate the administration of those acts of Congress, like the Walsh-Healey or Davis-Bacon Act,[3] which base their wage

1. Grumman Aircraft Engineering Corp., Case No. 13–285, September 14 (September 30, October 1), 1943. Concurring opinion of labor members Shipley and Brophy.

2. Van Dusen Kennedy, Union Policy and Incentive Wage Methods, New York, 1944.

3. Public Contracts Act, Sec. 1 (b), Bacon-Davis Act, U.S. Code, Title 40, Sec. 276 (a); Tennessee Valley Authority, 16, U.S.C.A., Sec. 831 (c); Defense Housing Employees Act of October 14, 1940, Sec. 121; Housing Con-

provisions on the rates prevailing in a specific locality.   If the expected trend toward equalization of wage rates throughout an entire industry should take place, these acts might be amended to make them better conform with those minimum wage laws which already stress industry practice in wage determination.

The *vacation with pay* provision was part of collective agreements in some regions and plants before the War Labor Board came into existence; but the Board ordered the inclusion of this clause, regardless of whether it was the practice in the area or industry.[4]   It established the norm of one week after one year of employment, and two weeks after five years.   It occasionally prescribed more,[5] but rarely less[6] liberal provisions, and hence liberalized a great many existing vacation plans, but left undisturbed others which it considered liberal.[7]   The important innovation lies, however, in the recognition of the fact that vacation pay forms a part of the worker's compensation.[8]   Under the rule of the new common law of industrial relations, all collective agreements must contain a clause to the effect that the employee has the right to one week's pay after one year of employment and to two weeks' pay after five years, while freed for the same periods of his obligation to work.   That the vacation clause represents an increase in the worker's claims for remuneration can be seen from the double pay the worker receives in case he continues to render services during his vacation period.   The remunerative aspect of the vacation provision is also clearly discernible in the ordering of vacation pay for employees whose services are terminated.   In these cases vacation pay compensates

struction Employees (National Housing Act), U.S. Code, Title 12 g, 1715 (c), Sec. 212.

4. Fulton Iron Works, Case No. 111-2419-HO, February 5, 1944, April 15, 1944.

5. Building Managers' Assoc. of Chicago, Case No. 3159-CS-A, August 27, 1943, two weeks after three years; Transport Drivers-Southern California Dairy Operators, September 18, 1943, B-991, two weeks after two years; Geneva Steel Co., Case No. 9-6397, October 13, 1944, one week after six months, two weeks after one year.

6. Wright Aeronautical Corp., Case No. 111-1375-D, October 11, 1943, two days after six months, increasing by two days for each additional year until twelve days after six years are reached.

7. Phelps Dodge Copper Products Corp., Case No. 144, September 10, 1942.

8. Sivyer Steel Casting Co., Case No. 111-2496-D, June 23, 1944.

the worker for a vacation which he can no longer consume.[9]
Vacation pay was also ordered in cases where the termination of
the employment relation was due to the worker's entering military
service.[1] In cases of varying incomes, due to different number of
hours worked or pieces produced, the Board assisted the parties
in the computation of vacation pay.[2]

Neither is *equality of treatment* in labor relations a new prob-
lem. "Equal pay for equal work" of woman workers dates back
to the early beginnings of American unionism. But the fact
remains that, during the inter-war decades, this principle, adhered
to by the War Labor Board in World War I, was rarely followed.
The present War Labor Board has revised this formula,[3] and
speaks now of "equal pay for comparable quantity and quality
of work on comparable jobs,"[4] or of "proportionate rates for
proportionate work."[5] The clearer formulation by itself would
not guarantee a survival of the principle in a future labor market,
which may contain numerous woman job-seekers who have lost
their return ticket to traditional family life, or who may prefer
the worker's life to domestic obligations, and so may find it
difficult to compete for jobs with even the normal amount of

9. Gen. Motors Corp., Case Nos. 125, 138, September 26, 1942; Mary-
land Drydock Co., Case No. 25–397-D, September 15, 1943; Fairbanks,
Morse & Co., Case No. 4327-D, September 8, 1943; Bethlehem Steel Co.,
Case No. 25–319-D, September 14, 1943; White Sewing Machine Corp.,
Case No. 65, May 1, 1942; Building Managers' Assoc. of Chicago, Case No.
3159-CS-A, August 27, 1943.

1. New Indiana Chair Co., Case No. 111–269-C, December 20, 1943.

2. Lumberman's Industrial Relation Committee, Case Nos. 90, 864,
November 19, 1943; Draymen's Assoc. of San Francisco, Case No. 24–879,
January 2, 1944.

3. Gen Order No. 16, November 24, 1942, amended January 3, 1944;
Marlin-Rockwell Case (NDMB); Gen. Motors Corp., Case Nos. 125, 138,
September 26, 1942; Norma-Hoffman Bearings Corp., Case No. 120, August
24, 1942; Brown-Sharpe Mfg. Co., Case No. 101, June 2, 1942, September
25, 1942; Remington-Rand Co., Case No. 44, April 23, 1942. See also "Equal
Pay for Equal Work for Men and Women," National Consumers League
Bull., May, 1944, pp. 2ff. (Cleveland, Ohio).

4. Building Managers Assoc. of Chicago, Case No. 3159-CS-A, August
27, 1943; Reeves Steel and Mfg. Co., Case; Bendix Aviation Co., Case No.
2941-CS-D, September 20, 1943.

5. Letter of Chairman Davis to Secretary of Labor, June 4, 1943,
W. L. B. Report of June 9, 1943, p. 11; Rotary Cut Box Shook Industry,
Case No. 111–132-C, December 7, 1943; Smith Wood Products Co., Case
No. 2383-D (256), December 10, 1943; Universal Match Corp., Case No.
2980-82, December 18, 1943; Aluminum Co. of America, Case No. 2879,
February 19, 1944.

unemployed males. What distinguishes the present situation from that of 1919 is the fact that this time a number of states have recognized this rule of the common law of industrial relations and embodied it in their statutes,[6] which encourages the hope that other states will follow and thereby perpetuate the ruling. Here is an example of how certain rules of the common law of industrial relations pass over into statutory law.

A complex problem which this war brought into the foreground is *racial equality*.[7] Racial discriminations against Spanish-Americans, Negroes, and other minorities are considered a threat to peace-time production and industrial relations to such an extent that a perpetuation of the Fair Employment Practice Committee is demanded. The National War Labor Board has accepted and applied the principles of this agency.[8] Its decisions help to solidify these principles into enforceable rules. The Board does not stop at ordering equal pay for equal work, regardless of race, color, creed or sex;[9] it seeks to extend the anti-discrimination order to hiring, promotion, demotion, lay-off, and merit increases based upon job classification.[1] The clauses which the Board ordered to be inserted in collective bargaining agreements indicate an obvious intention to cover all cases of racial discrimination. These cases show a great similarity to those which arose under Sec. 8 (3), N.L.R.A.[2] Because of this similarity we find combination clauses like the following: "It is understood between the parties that

6. After World War I only one state (Montana) enacted an equal pay statute. Since the outbreak of this war such legislation passed in Washington, Illinois, Michigan and New York, 58 M. L. R. No. 6, 1247, 59 M. L. R. No. 2, 359. The Michigan statute (Mich. Stat. ann. Sec. 21–824) was upheld by the Michigan courts.

7. An attempt to give preference to those United States citizens who resided in nearby towns was thwarted in Arcade Malleable Iron Works, N. W. L. B. (MB) Case No. 84, May 1, 1942.

8. Montgomery Ward & Co. (St. Paul, Minn.), Case No. 111–471-D, September 28, 1944.

9. Dean L. K. Garrison, address of January 12, 1944, B-1228: Standard Fruit and Steamship Co., Case No. 111–6058-D, November 27, 1944 (Equal Pay for alien seamen on American owned vessels flying the Honduras flag).

1. Miami Copper Co., Case 111–716-D, September 7, 1944, thereby destroying the preferential treatment of "Anglo-American Males" as against women workers, Latin-Americans, Filipinos, Negroes and Indians; In re Arizona Copper Co., Case No. 111–716-D, July 20, 1944.

2. D. O. Bowman, "Public Control of Labor Relations," Macmillan, 1942, pp. 77ff.; Joseph Rosenfarb, "The National Labor Policy and How It Works," Harper, 1940, p. 136.

company *and union* will give fair and reasonable consideration to any applicant regardless of race, creed, color, nationality, *non-union* or *union affiliation.*"[3] It would be indulging in wishful thinking to assume that the Board's policy in this respect has already received common acceptance. To perpetuate it in the postwar period will require crystallizing the practice into a statute.[4] Collective agreement clauses, like the one mentioned above, which combine the outlawing of racial discrimination with anti-union discrimination, suggest an amendment of Sec. 8 (3) N.L.R.A. An amendment of the Public Contract laws would constitute a first step in this direction.[5]

Only very recently has the Board shown any willingness to order *severance pay* (dismissal compensation). In the Basic Steel case[6] the Board directed the parties to negotiate the terms of such an agreement. Approving of the principle, it declared its readiness to settle this problem, if the parties should fail to come to terms within 60 days. Restricted to the facts of this case, severance pay was promised to the regular working force, graduated according to seniority, leaving temporary workers unprotected. The purpose was to compensate those who face discharge as a result of closing down of plants after the war and the concentration of production in facilities which have been built or technologically improved during the war. Ordinary technological displacements were not covered. In spite of all these restrictions, the important fact remains that dismissal compensation has achieved entrance into the common law of industrial relations. Used to some extent in collective bargaining agreements before the war and well known

3. Montgomery Ward & Co., Case No. 111–471-D, August 31, 1944; Wilson Co., Case No. 188, February 8, 1943, 6 WLR 395.

4. As to wartime legislation see Executive Order 9346, May 27, 1943, and interpreting letter of the President of November 5, 1943, 57 M. L. R. No. 6, p. 1123; New York wartime legislation prohibits racial discrimination by unions and employers alike, 55 M. L. R., p. 978. There is no assurance that the Southern states will imitate the few Northern states which have adopted permanent FEPC statutes.

5. Such a development is foreshadowed in the President's letter to the Attorney General of November 5, 1943, where it was made clear that the non-discrimination provisions of Executive Order 9346, May 27, 1943, are mandatory in government contracts. See 57 M. L. R. No. 6, p. 1123.

6. Basic Steel Case No. 111–6230-D, November 25, 1944. For a short survey of the Board's previous reluctant stand see the Report of the Public Members of the Steel Panel in this case, p. 167.

in its compulsory form in many European labor codes,[7] its adoption by the Board will secure for it a part in future industrial relations.

One of the most difficult problems in American labor relations is the length-of-service (*seniority*) principle. Where learner, apprentice or try-out rates change to the full job-rate automatically after expiration of an agreed time, the assumption is that the worker has achieved normal efficiency within this period or has been dropped. As a concession to management, Lewis M. Gill in a separate opinion in the General Electric Co. case[8] proposes to allow the employer to refute this presumption through the grievance machinery. The major conflict arises, however, when seniority is applied to questions of job security, wage increases, and promotions. It is here that labor's fear of arbitrary and discriminatory managerial decisions clash with management's determination to base its actions solely upon skill and performance. The Board tried to reconcile these opposite views by defining seniority as consisting of three factors: qualification (ability), fitness, and length of service, the last named coming into play only if the two first mentioned were equal.[9] The more important innovation consists, however, in subjecting the managerial decision as to equality of ability and fitness to the grievance machinery. In this way the employer's power to abuse these components of the newly defined seniority principle is definitely restricted.

In the above mentioned General Electric Co. case, management was given the initial right to decide whom to promote or to whom merit increase should be granted. It has to exercise

7. Everett D. Hawkins, Dismissal Compensation, Princeton, 1940, Ch. II, VI and VIII; "Dismissal-Pay Provisions in Union Agreements, December, 1944," Monthly Labor Review, January, 1945, p. 47.

8. "Automatic adjustments related to length of service can no more be depended upon to provide wage relationships based upon differences in skill and abilities than would the free exercise of 'management prerogative' in plants where apple polishing flourishes," Gen. Elec. Co., Case No. 111-3264-HO, August 26, 1944. For a solution similar to the one in this case, see American Telephone and Telegraph Co., Case No. 111-5908-D, November 28, 1944.

9. U. S. Gypsum Co., Case No. 111-4670-D, August 22, 1944. The Board, aware of the inherent difficulties in the "equality" provision, has left it to the Regional Boards to avail themselves of this provision or not: Holtzer-Cabot Electric Co., Case No. 111-6021-D, October 18, 1944. For a criticism of the equality provision see Wright Aeronautical Corp., Case No. 111-1375-D, October 11, 1943.

this right on the basis of skill and performance, avoiding discrimination. But the exercise of management's choice was made reviewable by the grievance machinery. The newly defined, jointly administered seniority rule is certain of being retained in peace-time agreements.

The *union representative*, in particular, has been vested with greater security. Like every other worker, he is protected by the National Labor Relations Act against discrimination because of his union activities; but the Board has lent its authority to the inclusion of provisions which add to the security of his job. To prevent a loss of seniority as a consequence of time spent on union matters but lost on work the Board ordered the employers to grant to employees who were elected to union office leaves of absence[1] or reasonable periods off. The Board also restricted the company's right to discharge such workers to cases where proper and sufficient reasons[2] are adduced, subject to review through the grievance procedure. Other clauses grant him not only seniority according to the length of his services with the company, but also super-seniority.[3] This innovation affords further protection against the danger of discharge because of work for the union. Consequently, super-seniority is limited to lay-offs, and does not apply to promotions and transfers.[4] To avoid abuse the Board also restricted super-seniority to a small and definite percentage of the employees in the bargaining unit.[5]

The strengthening of the position of the union representative is entirely in line with the general trend in the development of American labor law. As it matures, it tends to blend purely American solutions with applicable rules from the older continental European labor laws.[6] While super-seniority finds its exact

1. Sullivan Drydock & Repair Corp., Case No. 111–3516-A, February 25, 1944.

2. Ibid.

3. Armstrong Bros. Tool Co., Case No. 32, May 6, 1942; Atlantic Basin Iron Works, Inc., Case No. 25–29-D-10; Maryland Drydock Co., Case No. 25–397-D, September 15, 1943; Bethlehem Steel Co., Case No. 25–319-D (111–2170), November 12, 1943; Remington Rand Co., Case No. 111–1468-D, January 6, 1944.

4. Super-seniority was extended to cover transfers in Glenn L. Martin Co., Case No. 111–7696-D, October 21, 1944.

5. Wright Aeronautical Corp., Case No. 111–1375-D, October 11, 1943: Superseniority restricted to 1.306 per cent of the working force in the bargaining unit.

6. For French Labor Legislation see H. A. Marquand, Organized Labor

counterpart in those laws, the War Labor Board's solution for the payment of wages to union representatives for time spent in handling grievances in the McQuay-Norris Manufacturing Co. case[7] is entirely original. While granting such wages in some,[8] denying it in other cases,[9] the Board stated that the prompt and equitable handling of grievances is only a phase of the problem of making collective bargaining work. This is the duty of both parties, unions and management; hence the union representatives ought to be reimbursed by their union for time lost at work. Where this is not possible, i.e. because of the financial weakness of the union, the Board will divide these costs between union and management or levy them entirely upon management.[1] It is more than likely that these original principles will continue into the postwar world. They deal with problems which will continue to exist. Any later solution will not be able to neglect the principles established by the Board.

The discussion of job security and the security of union representatives leads to consideration of the problem of *union security*.[2] In this field the National War Labor Board made what is probably its best known contribution. Although the maintenance-of-membership clause had been known since 1925, its present form,[3] with escape clause, anti-coercion clause, and arbitration

in Four Continents, New York, 1939, pp. 39 and 47 (Law of June 24, 1936); for Republican German Labor Legislation see Nathan Reich, Labor Relations in Republican Germany," New York, 1938, p. 177.

7. Case No. 11–553–D, November 16, 1943.

8. International Harvester Co., Case No. 4, 4a, 89, April 15, 1942; Federal Shipbuilding and Drydock Co., Case No. 25–390–D, September 15, 1943; Western Electric Co , Case No. 111–6142–D, July 13, 1944 (credit for time spent investigating and adjusting grievances in computing premium pay for the sixth consecutive day); Glenn L. Martin Co., Case No. 111–7696–D, October 21, 1944 (past practices voluntarily agreed upon may justify the granting of pay to union representatives).

9. J. I. Case Co., N. W. L. B. Case No. 130, June 13, 1942.

1. Company to pay for time lost in settlement of grievances on Company property during regular working hours by employee-members: Sullivan Drydock and Repair Co., Case No. 111–3516–A, February 25, 1944; L. K. Garrison, speech of May 24, 1944.

2. All these security provisions form, together with the question of the economic implication of union organization itself and their policies, the problem of labor's quest for security, which forms a part of the still wider problem of economic security in a democracy. See "The Struggle for Economic Security in Democracy," Social Reasearch, Vol. VI, No. 2, May, 1939; Bryce M. Stewart-Walter J. Couper, "Maintenance of Union Membership," New York Industrial Relations Counsellors, 1943.

3. Norma-Hoffman Bearings Corp., Case No. 120, August 24, 1942,

machinery, constitutes a great improvement. Through the influence of the Board this device has found wide adoption. Although only rarely used before the advent of the National Defense Mediation Board, it now governs 20 per cent of all collective contracts, and 35 per cent of all manufacturing collective bargaining agreements. In the Aluminum industry it has conquered 70 per cent, in Agricultural Machinery 80 per cent, and in Steel 90 per cent of the management-union relationship.[4] But its strength is also its weakness. The maintenance-of-membership clause compromises basically uncompromisable points of view. The fundamental conflict between the individual's right to seek and keep employment, free from any compulsion to join a union, a voluntary association in the eyes of the law, and the economic interests of the group, which presumably protects the individual's rights, remains unsolved. The compromise is a makeshift solution, imposed upon the parties by wartime arbitration. There is at least one case recorded where a union[5] which had been denied a closed shop refused to accept the compromise. And if the numbers of dissents by industry members has any meaning, industry is by no means reconciled to this idea.[6]

reformulated November 27, 1943, Press release November 30, 1943, B-1135.

4. "Extent of Collective Bargaining and Union Status, January, 1944," 58 M. L. R. No. 4, p. 704.

5. United Automobile Workers, C. I. O. Locals 155 and 157, Detroit, O.W.I.-N.W.L.B. release, Friday, November 27, 1942.

6. The story of how Lapham's dissent in the International Harvester Co. case (No. NDMB-4, 4a, 89, April 15, 1942) and in the Federal Shipbuilding and Drydock Co. case (No. NDMB 46, April 25, 1942) led to the reformulation of the escape clause in the Ryan Aeronautical Co. case (No. 46, June 18, 1942) and in the E.-Z. Mills case (No. 55, June 12, 1942), which was rewarded by Lapham's concurrent opinion, while another industry member, McMillan, still persisted in dissenting, is a dramatic one. Finally, in the Phelps-Dodge Corp. case (No. 114, June 24, 1942) a unanimous board voted for the maintenance of membership plus escape clause. But the hope of gaining the consent of the industry members was shattered in the Caterpillar Tractor Co. case (No. 63, July 4, 1943), the Little Steel case (Nos. 30, 31, 34, and 35, July 16, 1942) and the S. A. Woods and Warner Automotive cases (Nos. 160, 135, August 1, 1942). Mr. Lapham had jacked up the price for the employers' consent. Now he wanted the W. L. B. to include in its "common law" the Smith-Vinson bill. When the Board's majority refused to legislate where Congress had hesitated, the industry members continued to dissent in nearly all cases where maintenance-of-membership had been ordered. And this attitude was maintained, although the War Labor Disputes Act and the Revenue Act of 1943 had brought them an almost 100 per cent fulfillment of their wishes to curb and regulate labor unions.

It will depend upon the condition of the postwar labor market whether industry really "will clamor in Congress for reinauguration of this ingenious device"[7] to stave off closed shop demands. Unions, on the other hand, will probably remember that even at a time when 20 per cent of all collective agreements contained a maintenance-of-membership clause, 30 per cent contained a closed-shop, 20 per cent a union-shop provision.[8] As things now stand, neither labor nor industry shows any inclination to accept a compromise for the respective ideals of open or closed shop.[9] No ruling of the Board can become a part of the living law of industrial relations without acceptance of its principles by the parties.

Like the maintenance-of-membership clause, the *check-off*, another device to assure union security, is also highly controversial. Not even all unions agree upon its merits. One union appealed against the granting of the check-off because it wanted to maintain its bond of friendliness with the members.[1] The employers' objections to this device are well known. To this problem the National War Labor Board brought a set of solutions adapted to the individual circumstances of the case. The automatic check-off, upon which the employers' scorn centers, is granted only in exceptional cases. Only the history of previous collective agreements or the special circumstances (lack of space, union officials, and time) surrounding the facilities to collect dues from shipyard workers in war-time Atlantic shipyards were deemed a justification[2] for this variant. Another reason for the ordering of an automatic check-off is the avoidance of controversy in the functioning of a maintenance-of-membership clause. The rule, however, is a

7. Chairman Davis before the House Investigation Committee, New York Times, May 23, 1944.

8. See Monthly Labor Review, April, 1944, p. 704. The 50 per cent figure for closed and union shop is surprisingly high. However, W. L. B.'s policy is partially responsible for it. The attempts of employers to replace existing closed union shop rules by the maintenance-of-membership clause were repulsed by the Board's Harvill doctrine (Harvill Aircraft Die Casting Corp., Case No. 163, February 12, 1943).

9. The voters of two states, Arkansas and Florida, amended on November 11, 1944, their respective state constitutions by a so-called "right to work" amendment which outlaws the closed shop (and presumably other union security provisions). A similar amendment was voted down in California.

1. Diamond Magnesium Co., Case No. 111-3751-D, July 27, 1944.

2. Federal Shipbuilding and Drydock Co., Case No. 25-390-D, September 15, 1943; New York Shipbuilding Corp., Case No. 25-354-D, September 16, 1943.

check-off where an individual voluntary certification of the wage assignment is required. This individual voluntary certification is made out to the company, either together with[3] or independent[4] of the joining the union by the member (although presumably at the same time). In the earlier cases the wage assignment covers dues and other payments[5] to the union and remains binding for the duration of the collective contract[6] (and the individual employment relation). The later decisions make the wage assignment revocable at any time at the will[7] of the union member. Thus, out of the experience of the War Labor Board emerges the individual voluntary revocable written wage assignment as the "common law" rule of check-off. This rule allows for exception in special circumstances. Its retention is almost assured. There is a definite trend in state legislation to favor the individual, voluntary form and to outlaw the automatic check-off.[8] Since War Labor Board and state laws converge upon this rule, the new form of check-off crystallizes as the law of the land.

Two innovations of the War Labor Board in the field of collective bargaining are of particular interest for the future of this institution. Both deal with the *extension of the collective contract*. The first extends the content of the collective contract (or of the Board's orders which, during war time, replace the voluntary agreement) to persons who were not parties to the contract or the dispute. The extension was ordered whenever these persons' industrial relations are so similar to those of the original parties that an extension of the contract (or order) simply averts the otherwise unavoidable dispute and hastens a result which would inevitably be reached. In the Building Managers

3. Big Steel Case No. 346, August 25, 1942; Little Steel Case Nos. 30, 31, 34, 35, July 16, 1942.

4. White Sewing Machine Corp., Case No. 65, May 1, 1942; Montgomery Ward & Co., Case No. 192, November 5, 1942.

5. A voluntary check-off covers, as a rule, dues, initiation fees and assessments, but not fines: Douglas Aircraft Co., Inc., Case No. 111-7661-D, October 20, 1944. Because of the voluntary character of the assignment, the Board refused also to limit the size of the assessments.

6. United Shoe Machinery Co., Case No. 304, August 14, 1942.

7. Wright Aeronautical Corp., Case No. 111-1375-D, October 3, 1943; Fairchild Engine and Airplane Corp., Case No. 111-4107-D, June 1, 1944.

8. For example: Wisconsin Employment Peace Act, Sec. 111.06(1)i; Pennsylvania Labor Relations Act, Sec. 6(1)f. See also the laws of Massachusetts, Michigan, Colorado.

Association of Chicago case[9] the Sixth Regional War Labor Board at Chicago received the power to issue an "order directing owners of the independent buildings . . . to show cause why they should not comply with this decision." Here the order was extended to non-members of the Employer Association in the same industry and labor market, and was deemed binding upon those who after the decision, but within its time limits, desire to withdraw from the Association. Presumably it also covered not only union members and non-union members in those bargaining units where the union was the exclusive bargaining representative (Sec. 9a N. L. R. A.) but also all other workers in the affected employer units, irrespective of union membership. The administrative extension of collective contracts to the entire industry is well known to students of Continental European labor legislation.[1] There may be some doubt whether the principle of administrative extension of collective contracts will be carried over to peace time. An agency would first have to be selected which could be entrusted with this task, and it would also be necessary to work out the conditions under which an extension ought to take place.

Certain to be of lasting effect is the Board's *extension of the duration* of a collective bargaining agreement which has expired, until a new agreement has been concluded. This extension of time destroys the vacuum which otherwise would endanger the rights which the parties hold under the old contract. The "lawless" period is avoided. The War Labor Board *ordered* the inclusion of such a provision in those collective contracts where it had been omitted, and ordered the extension by itself, even in the absence of any agreement to this effect. While previously extension of time had its base solely in the expressed agreement of the parties, it is now implied by the "common law of industrial relations." A great host of decisions[2] culminated in the Board's statement of

9. Case No. 3159-CS-A (AR-107), August 27, 1942. There are many more cases where the W. L. B., after having settled a question of industry-wide importance, ordered minority outsiders to show cause why this settlement should not apply to them with equal force. This happened, for instance, in the steel industry as an aftermath of the Little and Big Steel decisions.

1. H. A. Marquand, op. cit., for the French law of June 24, 1936, and for Italian (Fascist) labor legislation. For Republican German labor legislation see Nathan Reich, op. cit., p. 89; Franz Neumann, Behemoth, p. 407; Hamburger, "The Extension of Collective Agreements to Cover Entire Trade and Industries," 40 International Labor Rev. 153.

2. Caterpillar Tractor Co., Case No. 111-3700-D, November 30, 1943; Carnegie Illinois Steel Corp., Case No. 13-350-D, December 27, 1943; Gen.

policy in the National Carbon Company case.[3] The revised rules of organization and procedure deny to a petition for review the power to stay or suspend an Extension order.[4] The "continuing power" of the collective agreement is also characteristic of European labor law.[5] The adoption of this rule within the American common law of labor does not, however, stem from this source, but from actual practice of employers and unions. This assures the retention of the principle after the war.

One of the most important contributions to future collective bargaining lies in the Board's policy governing the *administration and enforcement* of the collective bargaining agreement. Differences concerning the application and interpretation of the terms of the bargain can, especially under the strain of war nerves, lead to extensive interruptions of war production. The Board had therefore to improve all known methods of peaceful, effective and quick settlement of grievances.

Grievance machinery was of course widely in use before Pearl Harbor, but it was left to the War Labor Board to convince American industry and labor that here was an indispensable tool to "make collective bargaining work." As the Board pointed out in the Chrysler case, "collective bargaining is a day-by-day relationship, it is not confined merely to the consummation of an agreement once a year." The Board found inclusion of grievance provisions in a labor agreement to be necessary to maintain uninterrupted production, since it is invariably accompanied by a "no-strike-no-lock-out clause" during the time it takes to reach a settlement.[6] Consequently the inclusion of grievance provisions was ordered in almost all collective bargaining agreements.[7] They are now used, tested, and improved by a greater number of col-

Motors Co., October 4, 1943; B-1018; Bituminous Coal Operators, Case No. 111-1284; Westinghouse Airbrake Co., Case No. 111-1244-D; Trucking Industries in 12 Midwestern States, Case No. 4448; Western Union Telegraph Co., Case No. 111-5674-D, January 5, 1944; Montgomery Ward & Co., Case No. 111-5353-HO, January 13, 1944, April 5, 1944; N. Y.-N. J. Metropolitan Milk Distributors, Case No. 197 (extension of old contract until a collective bargaining agent is determined).

3. Case No. 13-353-D, December 22, 1943; see also speech of Chairman Davis on May 18, 1944, B-1524.

4. Revision of Sec. 802(576)(2), July 27, 1944, B-1666.

5. H. A. Marquand, op. cit., French law of June 24, 1936; Nathan Reich, op. cit.

6. Chrysler Corp., Case No. 240, October 12, 1942.

7. The French law of March 4, 1938 went even further. It established

lective bargaining parties, and will doubtless retain their position in the postwar period.

Another major achievement lies in the improvement of the *techniques* of settling grievances. These techniques have been developed through actual experience and made the subject of detailed study.[8] The necessity for prompt initial procedure and prompt settlement,[9] the limitations upon the number of steps[1] and the necessity of assuring a change in the personnel at each step,[2] the conflict between the right of the individual employee to voice grievances, as guaranteed by Sec. 9a, N. L. R. A., and the interest of the union in the settlement of these grievances[3] have all been well known problems, which the National War Labor Board only helped to clarify. The Board's most heralded contribution lies in the introduction of final and binding arbitration, as the last step in the grievance procedure,[4] and in the protection of the arbitrator's award against attacks of the dissatisfied parties.[5]

a legal obligation resting upon the parties to provide in all collective agreements a procedure for conciliation and arbitration of disputes arising out of the agreement. H. A. Marquand, op. cit., p. 45.

Arbitration of a question of interpretation of a contract provision in the absence of a contractual agreement covering this issue was ordered in American Enka Co., Case No. 111-7855-D, December 13, 1944. See also Aluminum Co. of America, Case No. 111-2531-D, July 5, 1944.

8. S. H. Slichter, Union Policies and Industrial Management, pp. 444ff., 491ff.; "Wage Adjustment and Grievance Policies," C. Canby Balderston, New York, American Management Association, 1941; "A Study of Grievance and Arbitration Procedures in Collective Bargaining Agreements," New York, Bureau of Personnel Administration, 1941; "Settling Plant Grievances: A Review of Grievance Procedures under Collective Bargaining," U. S. Dept. of Labor, Division of Labor Statistics, Bull. No. 60, 1943; "Arbitration Provisions in Union Agreements," 59 Monthly Labor Review, No. 5, p. 1001.

9. Speech of Lewis M. Gill, September 12, 1944, B-1743.

1. Baltimore Transit Co., Case No. 2650-CS-D, September 18, 1944.

2. Speech of L. K. Garrison, May 24, 1944. Right of employee to the assistance of a union official or other person in the presentation or prosecution of his grievance at an early level of the machinery: R. R. Donnelley & Sons Co., Case No. 4036-CS-D, January 26, 1945.

3. Aluminum Co. of America, Case No. 111-18, November 27, 1943.

4. Armour & Co., Case No. 111-5760-D, September 19, 1944; Cudahy & Co., Case No. 111-5763-D, September 19, 1944; Speech of L. K. Garrison, January 12, 1944, B-1228; Champlin Refining Co., Case No. 238, September 11, 1942.

5. Arbitration awards will not be disturbed unless they are in contravention of the wage stabilization program: California Assoc. of Employees, Case No. AR-422, August 24, 1944; Milk Distributing Cos. of Greater New York City, Case No. 2-20027, March 10, 1944. Even if the arbitrator's award is not in accord with Board policy other than wage stabilization (retro-

The most significant contribution, however, appears to lie in the definition of the *scope* of the grievance procedure. It was made clear that the grievance apparatus cannot be invoked in disputes which center upon a proposed change in the terms of the agreement, but can only be expected to yield acceptable results if it is restricted to the settlement of questions concerning interpretation, application, or alleged violation of these terms.[6] If a question arises as to whether a particular dispute is or is not a grievance, this question is to be submitted to and determined — if necessary by arbitration — by the grievance machinery.[7]

Neither the employers, the workers nor the unions, who all derive rights from the collective bargaining agreement and the employment relationship, are willing to submit the exercise of all their respective rights to the grievance procedure. In respect to some of their rights the parties want to be sovereign[8] and to maintain undisputed authority.[9] Complete freedom to act is opposed by the vague ideal of "industrial democracy."[1] Industrial democracy, i.e. the workers' right to participate in managerial decisions, is necessarily restricted in a free-enterprise economy. As long as the entrepreneur, and not the worker or "society," carries the financial risk of the undertaking, he must reserve for himself full freedom of decision on a great number of questions. Likewise, as long as the employer does not assume responsibility for the financial success or failure of the union, the unions have a perfect right to resent employers' attempts to control the use of

activity of wage increases, date), the award will not be reviewed by the Board: Assoc. of Retail Grocers, Case No. 3978-CS-A, September 9, 1944. See also "War Labor Board Policy on Review of Arbitration," Release B-70, September 10, 1943, and November 26, 1943, 57 M.L.R. No. 5, p. 935; Employing Lithographers Assoc., Case No. 111-582-AR, October 30, 1944; Sec. 2. 31, "Rule of Organization and Procedure."

6. Chrysler Corp., Case No. 240, October 2, 1942.

7. Montgomery Ward & Co., Case No. 192, November 5, 1942.

8. "Employers are usually unwilling to give up any of their sovereignty in industrial relations. . . ." Labor and National Defense, Twentieth Century Fund, 1941, p. 81.

9. Compare: "Not all disputes between employers and employees are suitable for arbitration. Certain issues are considered by one or the other party as so fundamental that under no circumstance could they be submitted to arbitration," John A. Lapp, "Labor Arbitration," National Foremen's Institute, Inc., 1942, pp. 44, 45.

1. For a survey of the changes which the concept of Industrial Democracy has undergone since the Webbs introduced it in 1897 see Elsie Glück's article, "Industrial Democracy," in Encyclopedia of Social Sciences, Vol. VII, pp. 691ff.

their funds or to write their constitutions. One of the hardest tasks is therefore to delineate the rights of union or management prerogative from those rights which, in realization of the ideal of combined control, are either exercised in common or — less time-consuming and more practical[2] — are exercised initially by one party but subjected to the control of a bipartisan grievance tribunal and eventually to arbitration.

The Board here offers a very ingenious solution. It insists upon an agreement of the parties, set forth in the written contract, enumerating the rights subject to the grievance procedure, or excluding them from it and thereby reserving them to the parties. Commenting on the minimum of rights to be exercised exclusively by the employer, the Board ordered the insertion of the following clause in a contract: "Changes in general business practice, opening or closing of new units, . . . the choice of merchandise to be sold or other business questions of a like nature not having to do directly and primarily with the day-to-day life of the employees and their relations with their superiors shall not be the subject of grievances and shall not be arbitrated."[3] The control through grievance procedure, however, was ordered in regard to management's right to hire, discharge, and direct the working force,[4] its right to discipline workers,[5] to grant merit increases, promotions

2. Consolidated Vultee Aircraft Co., Case No. 111-1468-D, November 30, 1944; W. L. Maxson Co., Case No. 111-3253-D, December 15, 1944. In this case the objective standards to be used were, however, made subject to negotiations.

3. Montgomery Ward & Co., Case No. 192, November 5, 1942. For other cases of exclusive management authority see: Decisions as to whether a vacation should be taken or work performed: Turbine Engineering Corp., Case No. 111-2708-D, December 30, 1943; Transfer and promotion in a hazardous plant, where the decision might affect the welfare of employees: Atlas Powder Co., Case No. 521, December 28, 1942; Payment of military severance pay (bonus) to employees entering the armed services: New Indiana Chair Co., Case No. 111-269-D, December 20, 1943; Sub-contracting is a prerogative of management: Borg-Warner Co., Case No. 111-8860-D, December 15, 1944.

4. International Harvester Co., Case No. 5 (NDMB 4, 4a, 89), April 15, 1942: The union recognizes the specific right of management to hire and discharge its employees and to direct the working force "subject to the grievance procedure." E. A. Laboratories, Case No. 111-11443-D, January 20, 1945.

5. The responsibility for disciplining employees must reside with management. The discharged worker leaves the employ. While he is out, the grievance procedure reviews management's decision: Borg-Warner Corp., Case No. 111-5665-D, April 27, 1944; Garrison, speech of May 24, 1944, p. 4; Pennsylvania Power and Light Co., Case No. 111-4840-D, January 25, 1944;

and upgradings,[6] and to administer a job evaluation plan.[7] In some cases the management is under an obligation to inform the union of its actions;[8] in others, such duty has been denied.[9] A refinement of this procedure was elaborated in the Riverside and Dan River Cotton Mills case.[1] Here management's initial right to make changes in work assignments, subject to the right of the union to question them through the grievance procedure and by arbitration, is strictly limited to day-to-day changes. With respect to technological changes, management's initial right is to be exercised only after prior notification to the union of contemplated changes and after joint discussion prior to the institution of the change. The initial responsibility still rests with the management. Questioning of the change by the union can take place only after the expiration of a trial period during which the workers coöperate fully to produce a fair test. For all other changes the Board prescribed three steps: collective bargaining; that failing, actual introduction of the change; if no agreement can then be reached, arbitration.

The practice of allowing one party to exercise a right initially, but giving the other party the right to question this decision through arbitration, applies also to union rights. The maintenance-of-membership clause adopted by the Board on November 27, 1943,[2] provides for arbitration of a number of disputes which might arise out of the administration of the clause. One of these disputes centers upon the union's right to suspend or expel a union member who "has failed to maintain his membership and good standing in the Union after the expiration of the escape

Scoville Mfg. Co., Case No. 111-8415-D; Stanolind Oil and Gas Co., Case No. 111-9795-D, November 21, 1944; Associated Fur Coat and Trimming Manufacturers, Inc., Case No. 111-6849-D, December 11, 1944.

6. Promotion: Gen. Elec. Co., Case No. 111-3264-IIO, August 26, 1944; Consolidated-Vultee Aircraft Corp., Case No. 111-2114-D, April 12, 1944; Upgradings: Consolidated-Vultee Aircraft Co., Case No. 2736-CS-D, February 10, 1944; Boeing Aircraft Co., Case No. 557, September 4, 1943.

7. Western Elec. Co., Inc., Case No. 2216-CS-D, September 13, 1944.

8. Consolidated-Vultee Aircraft Corp., Case No. 111-2114-D, April 12, 1944; the Thirteen Wisconsin, Illinois and Iowa Millwork Cos., Case No. 111-2356-D et al., October 27, 1944.

9. Bethlehem Steel Co., Case No. 25-319-D, November 12, 1943: management under no obligation to give shop steward notice of layoff.

1. Riverside and Dan River Cotton Mills Inc., Case No. 2664-CS-D, June 29, 1944.

2. Press release, November 30, 1943, B-1135; Harvill Aircraft Die Casting Corp., Case No. 163, February 12, 1943.

period." Upon demand by the union such a worker would have to be discharged from the company under the maintenance-of-membership clause. The employer's interest is here as much involved as the interest of the union or of the worker, and hence an invoking of the grievance machinery and of arbitration is indicated.[3]

Grievances are not the only disputes arising out of a collective bargaining agreement. Even more dangerous for the uninterrupted flow of war production is an attempt by one or the other party to breach a collective contract or an essential part thereof. The Board had therefore to turn to the problem of violations of collective bargaining agreements. It not only recognized the legally binding character of an expressed obligation to refrain from industrial warfare;[4] it went a step further and labelled a union which violates the contract an *irresponsible union*. It has enriched the catalogue of punitive judicial actions which can be taken against such a union, and added a number of very effective weapons. Of these the denial or the revocation of the union security clause[5] has received a great deal of attention. The denial of retroactivity of wage awards[6] or of retroactive vacation or the shortening of the

3. Bethlehem-Fairfield Shipyard, Inc., Case No. 111-8484-D, December 1, 1944: When under maintenance-of-membership, an employee's job is at stake, an arbitrator may inquire into the reasons for expulsion. "Is there any logical reason why a Union should be able to cause the discharge of an employee . . . without the possibility of impartial review?" Good standing is not restricted to the payment of dues, however.

4. Allis-Chalmers Mfg. Co., Case No. 111-3511-D, October 12, 1943. Because of the no-strike-no-lockout agreement of December 17, 1941, the parties were held under a duty to refrain from strikes, even in the absence of such a clause in a collective agreement. E. A. Laboratories, Case No. 111-11443-D, January 20, 1945.

5. Monsanto Chemical Co., Case No. 292, August 27, 1942; Pettibone Millikan Corp., Case No. 326, October 20, 1942; General Chemical Co., Case No. 267, September 18, 1942; Commercial Solvents Co., October 29, 1944, B-1806. Union security was also denied if a strike vote had been taken under the War Labor Disputes Act, in cases of "legal" strikes: Thirteen Wisconsin, Illinois and Iowa Millwork Cos., Case No. 111-2356-D, et al., October 4, 1944; Carr, Adams & Collier Co., Case No. 111-39-C, December 4, 1944.

6. Cramp Shipbuilding Co., Case No. 11-2396-D, January 22, 1944, set aside March 14, 1944; Yale & Towne Mfg. Co., Case No. 111-3214-D, June 12, 1944; Pullman Standard Car Mfg. Co., Case No. 111-1612-D, June 14, 1944. Denial of retroactivity of wage awards for strike period: Brew Schneider Co., July 17, 1943, 10 WLR I. Pay increase granted from date when strikers resumed work: Chrysler Corp.—Air Tem. Div., Case No. 111-430-D (5071), June 4, 1943, Cleveland Reg. Bd.; Wage increases suspended for period of unauthorized strike. Seyler Lumber Co., Case 111-2257-D,

back-pay period has proved almost as important,[7] while the with-holding of checked-off union dues in escrow[8] has been rarely utilized. A most interesting and promising weapon was used in the case of a local union's wildcat strike which was entered upon without the consent and against the will of the international union. Here the international union was ordered to investigate and dis-cipline the wildcatters and the local union and to report to the Board.[9] Punitive action does not halt at the union level. The Board deprived guilty union officials of their newly won sheltered position, namely, their super-seniority.[1] Evidently not all of these punitive measures will survive. While denial of retroactivity will disappear with the wage awards under the stabilization system, and the holding of dues in escrow has not seen enough tests, the suspension of a union security clause as well as of super-seniority for union officials has a good chance of being added to our machinery for the enforcement of collective agreements. The supervision of the disciplining of wildcat strikers by the national union presupposes, however, an agency which has this power in peace time.

The Board has also very clearly established what it considers a *responsible* union. We have already discussed the union's respon-sibility for the maintenance of peace and its duty to coöperate with management in the keeping of the agreement.[2] The Board has widened this responsibility to that of maintaining uninter-rupted production. It even measures union responsibility by its production record[3] and by its contributions to improvements[4] in the production process. Anything which curbs production is out-

September 16, 1943; Atlantic Reg. Bd., Wholesale Butcher, Casing and Offal Cos., Case 14 WLR 606: denial of one week of retroactive pay for each day worker remained away from work.

7. Report of the Steel Panel, Case No. 111-6230-D (14-1 et al.), Public Members, p. 258.

8. Executive Order No. 9370, August 16, 1943, No. 2; see also Central Foundry Co., Case NWLB No. 195, June 10, 1942.

9. Yellow Truck and Coal Co., Case No. 383, December 14, 1942. A fine imposed by the National for failure to end a wildcat strike was ordered to be deducted by the U. S. Rubber Co., Case No. 2307-D, January 16, 1945. Only an acute manpower shortage prevented the Board from ordering the discharge of 572 workers who had been expelled by the Union because of failure to pay the fine.

1. Yale & Towne Mfg. Co., Case No. 111-3214-D, June 12, 1944.

2. Little Steel Case Nos. 30, 32, 34, 35, July 16, 1942.

3. Brewster Aeronautical Corp., Case No. 111-3372-D, October 1, 1943.

4. Little Steel Case Nos. 30, 31, 34, 35, July 16, 1942.

lawed, whether it takes the form of a slowdown, restriction of output, picketing or solicitation for membership[5] during working hours. A union was commended because it did not use the disciplinary machinery of its organization to hinder or prevent members of the company's supervising force from properly discharging their duties in the interests of maintenance of production.[6] Union actions which promote production help to make a union responsible in the eyes of the Board. In this group falls the maintenance of union discipline.[7]

The Board then forges ahead and sets up a "few simple fundamentals of responsible democracy"[8] as determining the responsibility of unions. The union's responsibility to its own members starts with its admission policy. Fair and reasonable consideration of any applicant, regardless of race, creed, color or nationality, age, skill or sex,[9] are required. The initiation fee must be reasonable,[1] and its determination subject to scrutiny on the part of the international union. The new member must have access to the constitution and by-laws of his union.[2] Once a member, he must be able to have a voice in the determination of policy and the choice of officers of the union by reasonably frequent or periodical secret ballot elections.[3] A responsible union calls a strike only after a qualified majority of the local has voted for it

5. "Neither the union nor its members will cause or take part in any strike, slow-down, curtailment of work, restriction of production or interference with work." The union had to refrain from requesting the discharge of workers expelled from the union because of violating a union rule which ordered a slow-down: Ford-United Automobile Workers contract, quoted by L. K. Garrison in an address of May 24, 1944, p. 4. See also Building Managers Assoc. of Chicago, Case No. 3159-CS-1, August 27, 1943: limitations on work ruled out.

6. Brewster Aeronautical Corp., Case No. 111-3372-D, October 1, 1943.

7. Little Steel Case Nos. 30, 31, 34, 35, July 16, 1942.

8. Humble Oil and Refining Co., Case No. 111-1819-D, April 1, 1944.

9. Walker Turner Co., Inc., Case No. 17, April 10, 1942; Wilson Co., Case No. 188, February 8, 1943, 6 WLR 395; Montgomery Ward & Co., Case No. 111-471-D, August 31, 1944. A number of state laws prohibit discrimination in membership. See the writer's "Trade Unions under the Wagner Act," 21 Oregon Law Review, 1941, p. 60, n. 84; Kansas Stat. Ch. 265, 1941, and the laws of Nebraska, 54, M.L.R., p. 78. For wartime legislation in New York affecting unions and employers, see 55 M.L.R., p. 978.

* 1. Little Steel Case Nos. 30, 31, 34, 35, July 16, 1942; Glenn L. Martin Co., Case No. 111-7696-D, October 21, 1944.

2. Walker Turner Co., see Note 9 supra; Harvill Case No. 163, February 12, 1943.

3. Little Steel Case, see Note 1 supra; Humble Oil Case, see Note 8 supra; Walker Turner Co. Case, see Note 9 supra.

and the sanction of the International has been received. The member's financial obligations towards the union, such as dues, assessments, etc., ought to be reasonable and their amount, together with the method of levying these charges, ought to be determined by the national union.[4] In return, the National audits the accounts of the Local and makes audited financial reports available to the members.[5] Union procedure for taking disciplinary action against members, such as fines, suspensions, expulsions or re-instatements, must guarantee the member's right to an impartial trial, appeal and review in accordance with the constitution of the union.[6] In the special case of the members of the Newspaper Guild, where a conflict between union discipline and freedom of speech is involved, any member who claims that he has been expelled from, or penalized by, the guild because of his convictions, or because of anything he has written or failed to write for publication, has the right to present all the facts to an (outside) arbitrator.[7] Finally, members of unions which enjoy a maintenance-of-membership clause are protected against loss of their good standing, and hence of their jobs, through union action by the arbitration clauses of the standard maintenance-of-membership clause.[8] These protect him also against union coercion, if he decides to relinquish his membership within the escape clause

4. Little Steel Case, see Note 1 supra; Walker Turner Case, see Note 9 supra. In the Douglas Aircraft Co., Case No. 111-7661-D, October 20, 1944, the Board, in ordering a voluntary check-off to cover dues, initiation fees and assessments, refused by a tie vote to limit the amount of assessment. Dr. Witte's opinion states that such a move "would amount to a regulation of the internal affairs of labor unions, which neither Congress nor any state legislature has prescribed. It would mean subjecting labor unions to a form of governmental control not imposed upon any other private organizations." The opinion seemed, however, to be greatly influenced by the fact that there was "no evidence that unreasonable dues and assessments are charged or contemplated." A ceiling on dues ($1.50) and initiation fees ($3.00) was fixed in the Basic Steel Case, No. 111-6230-D, November 25, 1944.

5. See Notes 8 and 1 supra.

6. International Harvester Co., Case NDMB 4, 4a, 89, April 15, 1942; Walker Turner Co. Case, see Note 9 supra. Bethlehem Fairfield Shipyard, Inc., Case No. 111-8485-D, December 1, 1944.

7. Patriot Co., Case No. 111-927-D, March 3, 1944; The Associated Press, Case No. 111-5970-D, November 27, 1944.

8. Standard form of the maintenance-of-membership clause adopted November 27, 1943, B-1135; see also Norma-Hoffman Bearing Corp., Case No. 120, August 24, 1942; Armstrong Bros. Tool Co, Case No. 32, May 6, 1942; Gen. Chem. Co., Case No. 274, October 28, 1942.

period. A similar protection against union coercion is provided for non-members who want to remain outside the union.[9]

Out of these principles emerges a clear picture of the responsible union. The Board is establishing the positive and flexible rules of a *common law* of union conduct. These rules are being tested and improved in their day-by-day application in concrete cases, and will outlast the Board.

Another aspect of Board practice which deserves attention is the adoption of administrative practices designed to assure the prevention of abuses. As indicated by Dean Morse in the Caterpillar Tractor Company case,[1] the Board makes it a practice to file copies of union constitutions, by-laws, and names of officers, and inquires occasionally about dues and initiation fees. This is a very mild form of control and ought to be carefully distinguished from the quite sanguinary control measures of the more vindictive statutes of recent vintage.[2] Whittled down by court tests, these statutes also provide only a certain amount of publicity for the filed information, which is expected to exert a subtle pressure upon the unions to make all necessary changes in order to appease public opinion. In this way and through other state laws[3] this principle of the common law passes over into statutory law.

The Board has, however, laid the foundation for still another development. In interpreting its position in regard to the no-strike-no-lockout agreement of December 17, 1941, the Board has

9. Procedure for administering the maintenance-of-membership clause, November 26, 1943, B-1135.

1. Case No. 63, July 4, 1942.

2. The movement for restrictive labor legislation promoted by the Associated Farmers on the West Coast, the Council of Agriculture in Wisconsin, the Farm bloc in Minnesota and the Christian American Association in the South and Southwest is well on its way and had no small degree of success in the legislative periods of 1941 and 1943. For a summary see Mason C. Doan, "State Labor Relations Acts," this JOURNAL, Vol. LVI, 1942, pp. 567ff.; Joseph C. Owens, "Recent Labor Legislation," Illinois Law Review, January–February, 1944, pp. 309-20; "Digest of State and Federal Labor Legislation Enacted August 1, 1942 to August 1, 1943," Department of Labor, Division of Labor Standards, 1944, Bull. No. 63; M.L.R., October, 1943, pp. 778-80, May, 1943, pp. 941-44. New laws regulating unions are now in force in Alabama, Arkansas, Colorado, Florida, Idaho, Kansas, Massachusetts, Michigan, Minnesota, South Dakota and Texas. The 1945 crop of state laws may well see a further extension of this type of legislation. In the meanwhile, some of the provisions of these acts have been held unconstitutional by the state and federal highest courts.

3. Some state laws, like those of Alabama, Texas and Kansas, provide for the deposit of union constitutions, by-laws, and amendments thereof.

repeatedly referred to itself as the custodian entrusted with the duty of enforcing this agreement.[4] This powerful concept may be extended to cover the enforcement of collective bargaining agreements. It is not impossible to establish a system of labor courts to act as custodians of collective bargain agreements deposited with them, and such courts could adopt some of the policies of the present Board. These special purpose courts or boards, by force of their specialized knowledge, and due to their "tripartite character," which calls for representation of labor and industry on the court or board, might be better able to interpret and enforce collective contracts than the regular courts. They would probably be less bound by tradition, usage and practice to the strict rules of evidence or procedure. They would replace strict literal construction by an equitable appraisal; they would concentrate upon the substance of the case, leaving aside the mere technical aspects;[5] and they would show as little patience with legalistic technical and dilatory defenses as the Board.[6] Within such a system, the economist would play as great a rôle as the jurist, possibly greater. Thus another trend which the War Labor Board initiated and developed would be perpetuated. The decisions of such "enforcement boards" could be subjected to ordinary court review, as in the review provisions of the National Labor Relations Act. It is not asserted that such a development is imminent.[7] It has, however, parallels in other countries;[8] and if we ever adopt it, we shall be able to build upon the foundation of our experiences with the War Labor Board.

4. Address of Chairman Davis; speech of January 20, 1944, B-1244. E. A. Laboratories, Case No. 111-11443-D, January 20, 1945.

5. Big Steel Case No. 346, August 25, 1942.

6. New Bedford Rayon Case, May 13, 1943; Address by Chairman Davis, March 13, 1944, B-1358; Dunham Towing and Wrecking Co., NWLB release, May 23, 1943, B-661.

7. A recognition of the advisability of such a labor court system may be seen in the "Labor Relations Department of the Superior Court of the State of California, Los Angeles County," erected April 9, 1941, discontinued in February, 1943; see Kurt Braun, op. cit., pp. 288–91.

8. The French law, for instance, required the reducing of all collective agreements to writing. They become effective only after being filed in a public office, M.L.R., October, 1944; "Labor Conditions in France," p. 721. For a summary of labor courts in various European countries see Kurt Braun, op. cit., pp. 261ff.

DISPUTES ARISING OUTSIDE OF COLLECTIVE BARGAINING AGREEMENTS

The settlement of disputes arising out of the interpretation or breach of collective agreements by no means covers all the ground. Indeed, the most serious disputes arise where collective bargaining fails or does not apply. Collective bargaining does not apply to *inter-union disputes*, since here the disputants are not employers and organized workers, but union organizations. Here the Board has welcomed one solution and initiated another. The welcomed solution consists of a voluntary agreement between the contesting parties to refrain from raiding each others' bailiwick. The example was set by the anti-raiding agreement, highly praised by Chairman Davis, between the United Automobile Workers (C. I. O.) and the International Association of Machinists (A. F. of L.). But what may be possible in war time, under the combined pressure of the no-strike pledge, the War Labor Board's power to settle "any dispute," and a hostile public opinion, may not be feasible in peace time. There is every reason to believe that public opinion will remain hostile to inter-union disputes. Hence labor might adopt the Board's second solution. In its Press Release of July 25, 1942, the Board elaborated a number of different steps of procedure. The first step aimed at settling these family disputes by the machinery set up by the federation, or in the case of A. F. of L.-C. I. O. disputes, by a machinery set up by the two top organizations. This failing, the disputes were to be decided by the labor members of the Board. As a last resort the dispute was to be submitted to an arbitrator nominated by the public members of the Board.[9] With the necessary changes this procedure has a chance of being retained in peace time. This would be the one instance in which compulsory arbitration might be tolerated by a democratic system of dispute settlement.[1]

For the settlement of all other labor disputes, compulsory arbitration offers no acceptable solution. It must lead to the fixing of wages by the government[2] and also to the imposing of all other employment conditions on the parties. The governmental

9. H. K. Ferguson Co., Case No. 111-3331-D, January 13, 1944; Electric Auto-Lite Co., Case No. 111-1894-D, April 11, 1944, and decisions cited therein; see also Kurt Braun, op. cit., p. 205.

1. See Minnesota laws of 1943, Ch. 624.

2 Ting Tsz Ko, "Governmental Methods of Adjusting Labor Disputes," 1926, p. 30; Kurt Braun, op. cit., p. 123.

determination of the employment contract does not merely enlarge the scope of government interference; it leads perforce to a total control of all economic life by the state. For a short time, in an expanding economy of increasing prices, compulsory arbitration might avoid this grave implication. The history of Australian and New Zealand compulsory arbitration records a honeymoon period, when the courts consistently granted wage increases and thereby satisfied labor, while on the other hand steadily increasing prices made it possible for capital to absorb the increased labor cost.[3] But once labor realizes that wages are costs, that costs affect prices, and that prices determine labor's real income, labor will insist on price stabilization, which in turn will force capital to insist on the cutting[4] or freezing of wages. The Hitler regime froze wages and followed it up with the price-stop decree;[5] war-

3. H. A. Marquand, Organized Labor in Four Continents, 1939, p. 466: The determination of a basic wage by the Australian Commonwealth Court of Conciliation and Arbitration was hailed by workers and capital between 1912 and 1920 and in 1929. In both periods, wages increased steadily, but prices increased at a greater rate. For New Zealand, see J. B. Condliffe, New Zealand in the Making, 1930, p. 336; see also Ko, op. cit., pp. 127, 147.

4. The world depression was felt with peculiar severity in Australia and New Zealand. The fall of the prices of export products (staples) on the world market engendered a fall of prices on the respective domestic markets. In accordance with the fall in cost of living, employers opposed the basic wage rates for unskilled labor which the arbitration and wage boards had determined. Condliffe, op. cit., p. 356. Under the pressure of public opinion the Australian Federal Arbitration Court reduced by 10 per cent practically all wages over which it had control. Marquand, op. cit., pp. 470–72; David M. Dow, Australia Advances, p. 88; W. R. Maclaurin, Economic Planning in Australia, pp. 62, 249.

5. Wages were fixed by the extension of existing collective bargaining agreements. Any change of the minimum wage scale by agreement of the parties was made impossible by the abolition of the institution of collective bargaining. The power to change minimum — later also maximum — wages, taken from the parties, reverted to government officials, the trustees of labor by the act for the regulation of national labor of January 20, 1934. See C. W. Guillebaud, The Economic Recovery of Germany, 1939, p. 187; Franz Neumann, Behemoth, p. 345. It is true that an emergency decree in 1931 provided for price control of certain products and for an office of commissioner for the supervision of prices. But this price control was limited to cartel products and is comparable to anti-trust legislation. The cartel law of July 18, 1933, falls in the same category. See Maxime Y. Sweezy, The Structure of the Nazi Economy, 1941, p. 96. Even if the establishment of the Reich Commissar of Price Control in 1934 is considered a full price-fixing measure, it followed the wage fixing by over 10 months (November 6, 1943). See Lewis L. Lorwin, Economic Consequences of the Second World War, p. 35; Maxime Y. Sweezy, op. cit., p. 96. Real price control starts with the act for execution of the Four Year Plan of October 29, 1936: Neumann, op. cit., p. 305; Guille-

time America had to follow up price ceilings with wage stabilization.[6] Price and wage fixing, however, destroys the automatism of the market and replaces the economic decisions of the individual with a commandeered economy. In such an economy the individual, company, worker or union is no longer master of his decisions in the economic field; he has forfeited his economic freedom, and is in danger of losing his political freedom as well. As Professor Schumpeter pointed out, this is not a necessary consequence, but it is a likely alternative.[7] This does not mean that the parties to the labor contract ought to maintain unlimited economic freedom. The bulk of peace-time labor legislation may be modified, but in their major outlines the laws are here to stay.

Every democratic nation invariably wants to regain its customary economic freedom after the war emergency and the transition period have ended. This means that labor will again be in a position to strike, employers will again be able to meet this threat by a lockout. "But public opinion will not tolerate a return of 'jungle law' in American industry."[8] Since unilateral determination of wages by employers will hardly be revived, there remains merely the choice between government regulation — which our present economic system must deny — [9] and a voluntary

baud, op. cit., p. 171. Hence the price-stop decree followed the wage freeze by almost three years.

6. Prices were submitted to governmental control by the Emergency Price Control Act of 1942 (Public No. 421) approved January 30, 1942. Wage control followed 10 months later by the Anti-inflation law amendment to the above-mentioned act on October 2, 1942.

7. Schumpeter, Capitalism, Socialism and Democracy, pp. 284, 302. Prof. F. A. v. Hayek holds the loss of political freedom inevitable in a "planned economy." The Road to Serfdom, Chicago, 1944, Ch. V, VII and IX. But see also Carl Landauer, Theory of National Economic Planning, Univ. of Cal., 1944, Ch. VII; A. P. Lerner, Planning and Freedom, International Postwar Problems, July, 1945, p. 308.

8. Chairman Davis, address on May 18, 1944, B-1524: "Are we going to win peace abroad only to reopen the war in our own streets, on the picket lines?" Also speech March 13, 1944, B-1358.

9. Since the ill-fated Kansas Industrial Court Act of 1920, peace-time industry and labor have shown marked opposition to compulsory arbitration. "Opposition to compulsion in the settlement of labor disputes is one subject on which there seems to be agreement in all divisions of the labor movement and in the ranks of management." ... The National Association of Manufacturers resolved at its December, 1941, meeting that "Compulsory governmental arbitration of labor disputes is contrary to American principles," "Labor and National Defense," Twentieth Century Fund, 1941.

agreement of the parties.[1] The problem is therefore one of improving the methods by which the government induces the parties to come to an agreement. The members of the War Labor Board are well agreed on two questions: first, that less government in labor relations is in the best interest of all interested parties;[2] second, that the prewar settlement devices are inadequate and that some new form of dispute settlement is necessary.[3]

Following the best American tradition, opinion seems to favor a National Labor Mediation Board.[4] Before embarking upon this road it will be necessary to study anew the effects, limitations, drawbacks and assumptions of mediation. Kaltenborn[5] has summarized his findings on the National (Railroad) Mediation Board, and more detailed studies of this sort will become necessary.[6] He is willing to accept such a procedure for the field of labor disputes in general, and he very courageously sketches the organization of such an agency. His proposal will form a sound basis for future discussion. Our discussion here is restricted to those features of the War Labor Board which might be bequeathed to such a mediation board. Frank V. Morley is willing to accept the regional and industrial subdivisions (Regional War Labor Boards and Industry Commissions) for the mediation machinery.[7] This would introduce recommendations at different levels of procedure, and might be desirable in some cases while dilatory and unworkable in others. The parties to a labor dispute are already swamped by a multitude of persons and agencies who offer their good services to bring about

1. ". . . of all the major drives made by the common men throughout the world today, the drive for extension of collective bargaining is the only one which accepts the desirability of a capitalistic economy, which accepts private ownership, the wage system, and the profit motive as the best means of producing goods." W. H. Davis, November 29, 1944, B-1855.

2. Dr. George Taylor, speech of January 22, 1944, B-1245; Frank V. Morley, speech of February 19, 1944, B-1333.

3. William H. Davis, address of September 24, 1943, B-1003; also of January 20, 1944, B-1224; Dean Wayne L. Morse, speech of January 17, 1943, B-392.

4. Lewis M. Gill, address of September 12, 1944, B-1743.

5. Howard S. Kaltenborn, Governmental Adjustment of Labor Disputes, Chicago, 1943.

6. Kurt Braun's The Settlement of Industrial Disputes, Philadelphia, 1944, represents an important contribution. It relies heavily upon the German Republican law for an exemplification of the principles of mediation expounded by the author.

7. See Note 2 supra. Chairman Davis advocates even "Home town mediation," utilizing the experiences of the War Production committees. Speech November 29, 1944, B-1855.

a settlement.[8]   To add more will not be heralded as a great contribution, unless a review of the recommendations, made at a lower level of the mediation machinery, might be justified because of the culmination of the procedure in the publication of the final recommendation by a National Board, as under the compulsory investigation procedure of the National (Railway) Mediation Board and the National Defense Mediation Board.

A second feature which might comprise a part of the heritage is the tripartite character of the Board.[9]   Are the labor and industry members nothing more than attorneys for the parties, and does the power to make decisions therefore reside solely in the public members, as has been asserted?[1]   Some incidents seem to support this view and to lead to the conclusion that a panel consisting of public members only would represent a better equipped body for arbitration and mediation purposes.   For a while it seemed as if in all cases where a maintenance-of-membership clause was ordered, industry members would dissent, while in all cases where wage demands remained unsatisfied, labor members would do likewise, both groups acting in this way as a matter of principle.

Fortunately there is another side to the picture.   Labor and industry members are not permitted to participate in any decision in which they have a direct interest as an officer, employer, or representative of either party to the dispute.   In theory, at least, they do not represent the parties, but the interests of industry and labor as a whole.   In this rôle they have shaped the Board's policy in a very wholesome fashion.   The maintenance-of-membership clause in its present form is the most outstanding example of interaction on the part of all three groups.   The same is true of the Board's policy on check-off, retroactivity, and union responsibility; in short, of all major questions of policy.   Whenever the Board has come to the point of asserting its authority, its members have invariably acted unanimously.   Consequently, in all defiance cases,

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8. The coexistence of many mediation agencies for the same purpose, with overlapping jurisdictions and varying policies, and the problems created thereby, have been well described by Kurt Braun, op. cit., pp. 37, 40, 136. The same author also objects, for reasons similar to the ones expressed in this essay, to the following-up of mediation efforts by others on the same level. Op. cit., p. 34.

9. Kurt Braun, op. cit., p. 59, also favors employer and employee representation on mediation boards. He prefers to speak of "bipartite" representation (p. 139).

1. New York Times, March 22, 1943, and NWLB–OWI release B–521.

even when the defied decision had been a majority decision, the minority joined the majority in the demand for compliance with the Board's order. Were industry and labor members really only attorneys for their respective parties, all decisions would have to be majority opinions. Instead, we find that about half of the decisions were reached by a unanimous board.[2] This aspect of the tripartite character weighs heavily in favor of its retention in a mediation board machinery. Here even the much overrated danger of a labor-industry conspiracy to overrule the public members would lose all its importance.[3]

It has always been difficult to restrain the parties from strikes and lockouts until the mediation process has been completed. The parties, especially unions in seasonal labor markets, will object to such a provision, as well as to statutory strike notices, cooling-off periods, or the supervision of the strike-ballot. A mediation board will have to differentiate between the several possible labor market situations before accepting all the provisions of the Railway Labor Act. Because of the important change in conditions, it cannot rely upon the war experiences of the War Labor Disputes Act. To set off "legal" from "illegal" strikes does not settle labor disputes. Even "illegal" strikes need the mediation board's aid in the settlement. It appears doubtful, therefore, whether the policy of refusing to negotiate with men who are on strike (or with an employer who is locking out his men) ought to be continued.[4]

2. In a recent three-month period covering 1407 decisions, 48.6 per cent were unanimous. The remaining dissenting opinions were almost evenly divided between Public-Industry majorities (43.6 per cent) and Public-Labor majorities (41 per cent). Public members were overruled by a Labor-Industry majority in 1.5 per cent of the dissents: OWI Press release of October 14, 1944, B-1789. Dr. George Taylor on March 1, 1943, B-458, gave an even rosier account of the record which the tripartite feature made. According to him, 70 per cent of the decisions were unanimous. The remaining 30 per cent were divided equally between Public-Labor and Public-Industry majorities.

3. Public members were overruled in: American Smelting and Refining Co., Case No. BWA-114, January 4, 1943; Curtiss-Wright Corp., Case No. 2-3802, September 10, 1943; United Steel Workers, Case of December 22, 1943, B-1188; Assoc. of Team and Truck Owners, Case No. 24-966, January 24, 1944; Willys-Overland Motors Inc., Case No. 111-5704-HO, June 30, 1944, and many others.

4. Dean L. K. Garrison, speech of May 24, 1944, p. 4. Resumption of production under conditions prevailing at the time of the strike as a condition of settlement: E. A. Laboratories, Case No. 111-11443-D, January 20, 1945.

CONCLUSION

After all economic activities have reverted to peaceful occupation, the compulsory arbitration of labor disputes will disappear from the American scene, together with the War Labor Board. The war-time common law of industrial relations will partly disappear, and will partly be absorbed by statutory law, but for the most part it will continue to live in the rules of conduct which the parties establish for themselves. The body of these rules I have called tentatively the "industrial law" of this nation, and I pointed out its resemblance to international law. Would it be going too far if we ascribed to any governmental agency which continues to administer these rules, either because the parties voluntarily submit their differences to its arbitration or because of its function as mediator, a rôle similar to that of the International Peace Court at The Hague? Taking a leaf from the history of that body, may we not also prefer to the continued existence of numerous agencies of the Federal Government, states and local communities, with their conflicting jurisdiction, a unified system of voluntary arbitration and mediation? I am not advocating one court to deal with all aspects of industrial relations.[5] The enforcement of statutory labor law of the National Labor Relations Act type is best entrusted to a quasi-judicial board, with review by the courts. The enforcement of collective bargaining agreements could, as indicated above, be arranged in similar fashion. The administration and enforcement of wage and hour statutes need specialized knowledge of an administrative agency under court control. All these agencies and courts *enforce* the law. The proposed unified system of dispute settlement has no such power or function. The rules which it would apply, interpret, and develop belong to a system of unenforceable industrial law.

There is the danger, furthermore, that with the disestablishment of the National War Labor Board and the ending of a national common law of industrial relations, the stability of its successor, the industrial law, might be lost. The Board, basing its authority to decide labor disputes and fix terms and conditions

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[5]. Cf. D. O. Bowman, Public Control of Labor Relations, New York, 1942, pp. 468, 469. For reasons given in the text, the writer is equally opposed to a "National Board of Arbitration," as long as there is a chance that this board would have to rely upon compulsory arbitration. The dream of "one impartial national board" cannot be realized by dumping incongruous tasks upon the National Labor Relations Board. See Kurt Braun, op. cit., p. 183.

of employment upon the war powers of the Executive and upon the War Labor Disputes Act, decided consistently that it was not subject to state and local laws.[6] Through the authority which the Constitution confers upon the National Government in time of war, and the superiority of federal law over conflicting state laws, the War Labor Board's uniform provisions furnished at least a modicum of stability, predictability and consistency. The War Labor Board, however, is only a creation of the war, and the prospect of a peace-time jungle of conflicting and confusing laws looms ahead. As in the case of international law, industrial relations would gain in stability if a uniform administration of these rules should produce a uniform system of principles, with enough flexibility to allow for adaptation by the parties to the constantly changing needs of the industrial community and the peculiarities of each individual situation. We need another Hugo Grotius to give to industrial America a modern *De Jure Belli ac Pacis Industrialis*. Whoever undertakes this task will acknowledge with gratitude the vast and important contributions which the War Labor Board has made to American industrial relations.

6. This question arose mostly in cases where an ordered maintenance-of-membership or compulsory check-off came in conflict with a state law. Cudahy Bros. Co., Case No. 111-1494-D, September 30, 1944: contention of employer that standard maintenance-of-membership clause violates the Wisconsin Employment Peace Act rejected.

Little Steel Case Nos. 30, 31, 34, 35, July 16, 1942; U. S. Vanadium Corp., Case No. 111-1021-D, November 8, 1943 (Colorado Labor Peace Act, Colo. Laws 43, Ch. 13); Greenbaum Tanning Co., Case No. 3008-D, August 28, 1943 (Wisconsin Employment Peace Act, Wisc. Stat. 1941, c. 110); Universal Products Co., Case No. 111-3236-D, June 21, 1944; International Detrola Corp., Case No. 111-6948-D, September 5, 1944 (Michigan Statute precluding automatic and compulsory check-off). As an exception may be noted Hayward-Schuster Co., Case No.111-6039-D, June 23, 1944, where a directive of the First Regional War Labor Board at Boston, extending the terms and conditions of a collective bargaining agreement, was modified to conform to a Massachusetts law barring involuntary check-off of union dues.

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IN DEFENSE OF MONOPOLY

SUMMARY

Monopoly often only an attempt to solve a problem, 524. — The "classical" argument against monopoly, 525. — Its limitations, 525. — The rôle of deflation in the development of monopoly, 527. — Price flexibility and spiral effects, 530. — Wages and employment, 533. — The fear of deflation, 534. — Saving, 536. — Competition vs. deflation, 537. — Non-price competition, 538. — Advertising, 540. — Control of deflation, 540. — Other grounds for monopolistic trends, 541.

Ever since Adam Smith let off the first thunderous broadside, the attack on Monopoly has been a favorite occupation of economists. It cannot be claimed, however, that the attack has been particularly successful; indeed, it seems to have produced more smoke than shot. For coincident with the attack there has been a great growth of the very institution attacked. The forces of free trade have been completely routed, and even Great Britain, the last citadel, has fallen to the protectionists. In business, in labor, and in agriculture combinations of a more or less monopolistic nature have grown until they have become the normal state of affairs. And government, far from discouraging this movement, in most cases actively promotes it, in spite of some small libations to the competitive ideal in the shape of anti-trust acts.

This universal disregard of the advice of the economists should, perhaps, have the effect of calling its soundness into question. It is the main thesis of this paper that the drive towards monopoly is not only the result of original sin and human selfishness, but is also a desperate and rather misguided attempt to solve a problem that the economists have rarely recognized as important — the problem of deflation. I do not argue that monopoly is a desirable or necessary solution to the problem, nor that the fear of deflation is the only motive for monopoly. I maintain, however, that in the absence of a more adequate solution of the problem (which I believe to be possible through governmental fiscal and monetary policy), monopolistic organization and restriction of some kind is the only device which is available to particular groups within society to isolate themselves from the deflationary pressure characteristic of any economy in an advanced stage of capitalistic accumulation.

There are two arguments generally brought by economists against monopoly. The "classical" argument, which stems directly from Adam Smith, concerns itself mainly with the effect of monopoly on the distribution of resources between different employments and on the distribution of income between individuals. It regards the main task of economic organization as that of dividing resources among a number of competing employments. If there are costs of transfer between employments, the social product is greatest when the difference between the value of a marginal unit of resources in one employment and in another is equal to the cost of transfering the unit from the less to the more advantageous use. The case against monopoly is that it creates artificial "costs of transfer" between the rest of society and the monopolistic employment, and hence leads not only to a maldistribution of the social product — the monopolist getting too much and the rest of us too little — but also to a diminution of the product, due to the fact that resources which might be more advantageously employed in the monopolistic occupation are forced artificially to remain outside. Monopoly may be shown to be present, and harmfully present, if for artificial reasons there are workers who would prefer to work in a certain occupation, but cannot, or capitalists who would prefer to employ their capital in a certain occupation, but cannot.

It is important to stress that the resistances to these transfers must be in some sense *artificial*. There may be wide differences in the marginal return to resources in different occupations due to the real costs of occupational or geographical transfer. Such differences are not evidence of monopoly. It is only when the hindrances to the transfer of resources are created by some act of deliberate human organization, and do not involve the expenditure of real resources having alternative uses in the production of a product, that monopoly is in evidence.

With the general principles of the classical case against monopoly there can be little quarrel, once its limitations are understood. It is, of course, like almost all classical theory, "static" in the sense that it deals with the ends towards which the economy is moving, rather than with the process of movement towards those ends. Hence any practical conclusions for public policy which are drawn from the theory must be directed towards rather long-run objectives of society, and are especially subject

to judgment by criteria drawn from outside the sphere of pure economics. In drawing political conclusions from the argument, certain practical difficulties also arise which are worthy of mention. There is a certain difficulty in deciding what hindrances to the movement of resources are "artificial" and what are "natural." We may feel fairly safe in identifying a tariff barrier as an artificial increase in the cost of transport between two places, and hence in condemning it as a monopolistic institution. We may feel a little more doubtful about the status of trusts, cartels, agricultural coöperatives, marketing agreements, and labor unions. We may be still more doubtful about such institutions of social life as the professional exclusiveness of medical associations, the Ph.D. obstacle race of the professors, the licensing of barbers and plumbers, high pressure advertising, and the legal protection of patents, trade-marks and brand names.

It is evident that there is a sphere of "natural" monopoly where the only possible remedy is regulation or administration by somebody responsible to the whole community. These policies have generally been applied only in the field of public utilities and transportation, but they may be capable of much wider application — for example, to the regulation of land rents or of the rent of ability. There are also important cases where a regulated monopoly is actually preferable to the situation that would emerge in the absence of regulation. The practical alternative to monopoly is usually not perfect competition, but imperfect competition is one of its many forms. Imperfect competition usually results in certain social wastes, which in theory at least could be avoided by substituting a regulated monopoly, as in house-to-house deliveries. There are also situations where the alternative to monopoly is a highly unstable oligopoly, characterized by alternative periods of destructive price-cutting and quasi-monopolistic agreement. Industries where a few sellers produce a fairly homogeneous product are likely to fall into this category: the steel and cement industries are good examples. In such industries, in the absence of some sort of concerted action, an aggressive seller will be tempted to cut prices, hoping that the others will not follow suit and that he will be able to attract a large volume of business from them. The other sellers, however, are forced sooner or later to try to recapture their market by cutting their prices also, whereupon the original price cutter may

cut his prices still further.[1] This process may go on until the whole industry is unprofitable, when the temptation to come to some agreement or combination is almost irresistible. Thus it is no accident that the basing-point system, which effectively restricts price competition, is characteristic of industries where a few firms produce similar or identical products.

Another limitation on the classical case against monopoly is the danger that innovations will not be made unless the innovator is protected, either by law or by laziness, from too rapid imitation of his innovation: otherwise the profits of innovation will be immediately swallowed up by a host of imitators. This is the principle which underlies the patent and copyright laws. It follows from the theory of economic progress rather than from that of static distribution, and hence must be regarded as a limitation of the classical case against monopoly due to its static character. There are difficult theoretical problems involved in considering how much legal protection of monopoly should be given in the interests of innovation. Questions such as the length of time for which patents should be protected, or whether the protection given to trade-marks and brand names should also be of limited duration, seem to be capable as yet of no theoretical answer.

It is not, however, the main purpose of this paper to discuss the limitations on the long-run classical case against monopoly. I wish to consider a neglected phase in the motivation and origins of monopoly, and to answer a criticism of monopoly based, not on long-run, static considerations, but on short-run considerations of price policy and full employment. The neglected phase in monopoly theory is the part played by the pressure of deflation in the formation and encouragement of monopolistic organization and legislation. The unjust criticism is that monopoly causes unemployment by preventing the downward movement of the prices both of commodities and of factors of production in times when these downward movements are held to be necessary.

It has been particularly evident in the past two or three

1. It is worthy of note that under certain circumstances the unorganized labor market also may exhibit the phenomenon of oligopoly. Although it is not customary for the worker to "undercut" wages, as it is usually the buyer (employer) in this case who quotes the price of labor, yet the worker who is willing to accept a cut in wages in order to retain his job may force all competing workers to follow suit.

decades that powerful deflationary forces are at work in the capitalist world—forces which even the great budget deficits of two wars and an unprecedented flow of gold from the mines have failed to check more than temporarily. These deflationary forces underlie almost every major social and economic problem in our society, yet they have been little heeded by economists. The root cause of this deflationary pressure is the ever-increasing stock of goods, resulting from the failure of consumption to keep pace with the productive powers of a technical society. I have shown elsewhere[2] that in a purely competitive market the price of any commodity is given by the formula

$$P_a = \frac{M r_a}{A r_m} \tag{1}$$

where A is the total stock of the commodity in the market, M is the total quantity of money in the hands of the marketers, r_m is the "preferred liquidity ratio" — the proportion of the total value of assets which people wish to hold in the form of money, and r_a is the "preferred commodity ratio" — the proportion of their total assets which people wish to hold in the form of the commodity. This formula also holds for the general price level of storable goods, A in this case being the total quantity of goods in existence and M being the total quantity of money.

It is clear from Equation (1) that if the stock of goods (A) increases without any changes taking place in the quantity of money or in the preference ratios, r_a and r_m, prices must decline proportionally. If prices are to remain constant in the face of an increase in the total stock of goods, there must be either an increase in the quantity of money or an increase in the commodity preference ratio (i.e. an increase in the willingness to hold commodities), or a decline in the liquidity preference ratio (i.e. a decline in the willingness to hold money). It also follows that a rise in the physical stock of commodities will not cause a rise in the *value* of that stock $(P_a A)$, unless M and r_a increase, or unless r_m falls. A rise in the value of the stock, however, is what

2. Economica, May 1944, p. 55. A simple proof is as follows. Let the total value of all assets be T. The value of the stock A is $P_a A$. Then by definition,

$$r_m = \frac{M}{T} \quad \text{and} \quad r_a = \frac{P_a A}{T}$$

Eliminating T between these two equations gives us equation (1) above.

is meant by "investment," in the financial sense of the word. Such investment is impossible unless there is an increase in the quantity of money or a favorable change in the preference ratios. Otherwise any increase in the physical stock of goods would be counterbalanced by a proportionate fall in their prices, and the "dollar value" of the total stock could not be increased by increasing its physical quantity. Thus, if a rise in the stock of wheat from 100 to 101 million bushels led to a decline in price from one dollar to ninety-nine cents, the total value would fall from 100 to 99.99 million dollars, and there could not be any net total investment in wheat, even though some individuals could increase the value of their holdings at the expense of others. If this situation is general for all goods, any net attempt to save (i.e. to increase the total money value of assets) will simply result in a decline in production through unemployment.

Throughout the nineteenth century the deflationary force of the accumulation of goods was largely counterbalanced by a great increase in the quantity of money (i.e. liquid assets), in small part due to increased production of gold, but for the most part due to the development of systems of banking and paper money. Even in the nineteenth century there were serious deflationary periods — e.g. the years after 1815, and again after 1870, and it is noteworthy that they gave substantial stimulus to the growth of combinations, both in business and in labor. Thus in Britain, the post-Napoleonic deflation coincided with a great burst of trade-union activity, as did the deflation of fifty years later in both Britain and the United States. The rise of business combinations also is substantially a phenomenon of great deflationary periods — so much so that in the N. R. A. the movement even received legal sanction. In agriculture, also, the "Union" movements have been characteristic of deflationary periods — the Grangers and the Populists of the '80's, the Farm Bureau and Farmers Union of the 1920's and 1930's. It is, indeed, impossible fully to appreciate the significance of unionism — using that term in the broadest sense to cover all combinations for joint economic action, whether of workers, businessmen, or farmers, unless we see it against the background of deflationary forces.

The prime error of the economists in the interpretation of unionism and protectionism has been to assume that the only purpose of monopolistic combination is to divert a larger pro-

portion of a fixed total output to the possession of the "union." In a static society with full employment this would, of course, be true — an increase in the price of a monopolized product would presumably mean a gain for the monopolist, solely at the expense of the other sections of society. It must also be confessed that one aim of most combinations is indeed that of maintaining a position of privilege at the expense of the rest of society. Nevertheless, if this were the whole story, the universal support which is found for monopolistic combinations among all the most active sections of society could not be explained. In the field of labor most trade unionists will support the wage-maintenance policies of other unions, even to their own detriment. This is seen clearly in the "label trades," which are mainly concerned with the manufacture of wage goods. Most unionists support the Union Label, even though, according to the usual theory of monopoly, the gains of unionists in the label trades would be made, for the most part, at the expense of unionists outside these trades, through the rise in the price of the union-label product. Among businessmen there is much moral support of monopolies in general, even while lip-service is paid to "free enterprise." It is not so much part of our mores to approve monopolistic combinations in business, as it is in the field of labor; hence the "solidarity" of business is to be seen more openly in the almost universal support given to another monopolistic device — the protective tariff. Businessmen will support a tariff on someone else's product even to their own hurt, simply because they feel that protection is in some way a "good thing." Farmers, as Adam Smith pointed out, are perhaps least subject to the "wretched spirit of monopoly"; but that judgment might have to be modified substantially today, in view of the universal support in agricultural circles for restrictive legislation, for agricultural cartels, and for governmental assistance.

The support of monopoly *in principle*, and not merely as a means for feathering one's own nest, is undoubtedly an expression of an almost unconscious but very strong fear of deflation on the part of the world of practical men. Workers, businessmen, and farmers know from experience that periods of falling prices and falling money incomes are disastrous to all concerned. Hence, they have been entirely unreceptive to the blandishments of economists, who have based their arguments against monopoly on the ground that it prevented prices from falling, and who have

tried to persuade people that the remedy for falling prices was to make prices fall still faster and more furiously. In this the wisdom of the ignorant may have been sounder than the folly of the learned. It is becoming apparent that "price flexibility," far from being the golden recipe for prosperity, may lead us into disastrous or even bottomless deflation.[3] The world has never experienced a hyperdeflation, as it has experienced hyperinflation, though there was a moment in 1932 when it almost seemed possible. It is only the inflexibilities in the system, however, that prevent such a bottomless deflation: if all prices were immediately adjustable to every shift of demand or liquidity preference, if the quantity of money were likewise adjustable, as it would be under a pure banking system where bank deposits were the only liquid assets, and if there was perfect flexibility in people's ideas of what the price level "ought" to be, so that the elasticity of expectations was independent of the absolute price level, then there would be no endogenous causes operating to stop a deflation once it had begun.

It is odd that the supporters of price flexibility seldom apply their doctrines to the case of inflation. Applying the usual argument in reverse, one might say that if an excess of consumption over production (e.g. in war) leads to sharp declines in the stock of goods, then the remedy would seem to be a rise in prices. The rise in prices would choke off consumption, would prevent shortages, and would restore equilibrium. The fallacy is obvious; a rise in price of any commodity or group of commodities for which the demand is relatively inelastic will raise the money incomes of the producers of the dearer commodity. This rise in incomes causes an increase in demand for other goods, leading to a further increase in prices, and if the demand for these goods is relatively inelastic, to a further increase in incomes. So we run into the familiar "inflationary spiral." It may be, of course, that when the inflation has reached a certain point the redistribution of purchasing power which it causes will so reduce consumption that further inflation is unnecessary, and the "spiral" becomes a "circle." This point, however, may be at a very high level, and may even be at an infinite level, as in the case of "hyperinflation." It is now almost universally recognized that other methods of

3. See Hicks, Value and Capital, Chapter XX.

restricting consumption in a period of inflation — such as rationing — are greatly to be preferred to a sharp rise of prices.

It should be equally obvious that deflation works in a very similar way, and that "gluts" are likely to lead to a deflationary spiral, just as "shortages" lead to an inflationary spiral. If prices are flexible, falling prices may lead to falling incomes, which lead in turn to falling demands and a further fall in prices. Just as administrative restrictions on consumption are generally preferable to serious inflation as a means of dealing with shortages, so the administrative encouragement of consumption should be preferred to serious deflation as a means of dealing with gluts.

The "spiral" effect, whether inflationary or deflationary, depends on the assumption that the demand for the commodity whose prices are changed is relatively inelastic. Otherwise, in the case of a commodity with a relatively elastic demand a fall in price has an inflationary and a rise in price a deflationary effect on incomes and on other demands and prices. The elasticity of demand for any commodity or group of commodities depends, however, on the proportion of the total output (or income) which the commodity or group represents. The larger the proportion which the output of a given commodity or group bears to total output, the less elastic is its demand likely to be. The demand for all commodities together would be perfectly inelastic, if behavior was rational and the money supply flexible: there is no reason why a similar change in *all* prices should appreciably change consumption or purchases. To put the same matter in another way: the elasticity of demand for any commodity or group of commodities depends on the degree to which substitutes are available. The larger the group, the less likely is it to have substitutes, and the more inelastic the demand: the totality of commodities has no substitutes, and has a perfectly inelastic demand. Price changes are a cure for gluts or scarcities, then, only in the case of groups of commodities the output of which is small enough in relation to the total to permit an elastic demand. When we reflect that even a commodity such as wheat, which has fairly good substitutes in consumption and which accounts for only about one per cent or less of the total value of output, almost certainly has a relatively inelastic demand, it will be seen that a commodity or group will have to have excellent

substitutes and account for a very small proportion of total output before its demand can be relatively elastic.

The full discussion of this problem would go far beyond the scope of this paper; we may, however, develop the analysis a little further in the field of labor. It should be theoretically possible, in any given situation, to divide occupations into two groups — those in which a fall in wages will raise employment as a whole, and those in which a fall in wages will lower employment as a whole. The dividing line will be somewhere along the range of elasticities of demand for labor: in those occupations in which the demand for labor is highly elastic a fall in wages, by bringing a large increase in employment, will raise incomes in that group, raise the expenditures of that group and therefore raise the incomes of other groups and increase employment elsewhere in the system. If wages are lowered, on the other hand, in occupations where the demand for labor is inelastic, incomes in that occupation will decline, and unemployment is likely to increase elsewhere in the system. This increase in secondary unemployment may more than compensate for the fall in primary unemployment in the occupation concerned. The elasticity of demand for labor in any particular occupation which would make a change in wages have no net effect on total employment may be called the "null elasticity." An occupation is "employment-increasing" if the elasticity is greater than the null elasticity, and is "employment-decreasing" if the elasticity is less than the null elasticity. It is shown in the footnote below[4] that the null elasticity, on certain reasonable assumptions, is equal to the proportion which the employment outside the particular occupation bears to total employment. Unless the particular occupation is a large part of the economy, therefore, the null elasticity will be only slightly less than unity. Thus, even for an occupation which accounted for 10 per cent of total employment, the null elasticity would be as great as 0.9. A demand for labor more inelastic than this would put the occupation into the "employment-decreasing" category, in which a fall in wages would have an adverse effect on total employment.

4. Let w be the wage, q the amount of employment in a particular occupation. Let r be the amount of employment in the rest of the system. Then total employment, $E = q + r$. We have then, if $r = Nq$, and μ is the elasticity of demand for labor in the particular occupation,

The same formula holds, approximately, for prices as well as wages. Thus a cut in farm prices amounts to the same thing as a cut in farm wages, and will have an employment-increasing effect only if the elasticity of demand for farm products is above its "null elasticity" — say about 0.9. This is most unlikely to be the case, from what we know of the elasticity of demand. Thus the resistance of business groups and farm groups to a cut in prices, and of labor groups to wage cuts, makes a good deal more sense, even as a matter of public policy, than economists have usually allowed, especially in view of the fact that so many demands are in fact relatively inelastic.

In fact, when people talk and write about the "evils of competition," what they are usually referring to, all unconsciously, is the process of deflation. Thus the classic description of the "higgling of the market" given by Sidney and Beatrice Webb in Industrial Democracy, on which they base their main theoretical defense of trade unionism, is nothing more nor less than a quite unrecognized description of the process of deflation, whereby the deflationary pressure operates, first on the retailer, then on the wholesaler, then on the manufacturer, then on the worker, leading to a perpetual pressure for lower money prices and lower money wages all down the line. The Webbs conceive unions — and indeed monopolies in general — as "dams" to hold back the flood of deflation, though they fail completely to recognize the essentially *monetary* nature of the phenomenon.

$$\frac{dE}{dw} = \left(\frac{dq}{dw} + \frac{dr}{dw}\right) = \left(\frac{dq}{dw} + N\frac{dq}{dw} + q\frac{dN}{dw}\right) = \frac{q}{w}\left(\mu(1+N) + w\frac{dN}{dw}\right)$$

If now $\frac{dE}{dw} = 0$, i.e. if a change in wages is to produce *no* effect on total employment, we have

$$\mu_0 = -\frac{w\frac{dN}{dw}}{1+N}$$

If we assume that employment in the rest of the system is a constant proportion K of the income in the particular occupation, so that $r = Kwq$, the formula can be further simplified, for then $\frac{dN}{dw} = \frac{d(Kw)}{dw} = K$, and we have

$$\mu_0 = -\frac{N}{1+N} = -\frac{r}{q+r}$$

μ_0 is the "null elasticity." It will be seen that it must be less than 1, but will not be much less than 1 unless the particular occupation is a large part of the system.

Why, then, is deflation so disastrous and so much dreaded by all economic groups?   The unimportance of the absolute level of prices, provided that relative money values are unchanged, has been recognized from the days of Adam Smith.   It has long been recognized also that the *process* of deflation or inflation inevitably distorts the relative price structure and causes grave injustices as between debtor and creditor.   Less clearly understood, perhaps, has been the intimate and necessary connection between deflation and unemployment, these indeed being essentially part of the same phenomenon — the desperate attempt of a gorged economic system to slacken the rate of accumulation, in the face of a strong net desire to accumulate on the part of its members.   The rate of accumulation — i.e. the rate of increase of the total stock of goods — is equal to the rate of production minus the rate of consumption.   As accumulation proceeds, the time eventually comes when the *rate* of accumulation must slacken, for there is no point in mere accumulation for its own sake, no point in merely piling up stocks forever, when the only ultimate purpose of these stocks is to assist the processes of production and consumption.   There are only two ways to lessen the rate of accumulation; one is to increase consumption, the other is to diminish production.   The sensible solution would seem to be to increase the consumption of those goods which give rise to wholesome pleasures and a high standard of life.   This solution is either too simple or too sensible for us: we prefer either to increase the consumption of materials of war or to diminish production through unemployment.   The crisis of our time can be explained rather simply on the assumption that the closing of the frontier, the decline in the growth of population, and the absence of any great equipment-using inventions in the western world have brought us to the point where the rate of accumulation *must* decline substantially, but where we are apparently unwilling to accept the sensible solution (i.e. a very substantial rise in the standard of consumption) and are therefore thrust against the horns of an intolerable dilemma — war and full employment or peace and unemployment.   This crisis is always threatening in a rich society with great productive powers.   It was postponed during the nineteenth century, because the opening up of new lands, the growth of population, and the discovery of great capital-using inventions such as the railroad made necessary an

unprecedented increase in the total stock of goods, and therefore permitted a rate of physical accumulation equal to, or even at times exceeding, the "preferred" rate of accumulation.[5]

In the presence of a strong desire to save (i.e. to increase the total value of assets) a decline in the rate of accumulation will come about mainly through deflation, unemployment, and a decline in production. The mechanism is as follows. Abstention from consumption leads to a piling up of inventories and a consequent decline in prices. The decline in prices makes production unprofitable, for profits are obtained through a *rise* in the value of assets: if prices generally are falling, the fall in the prices of assets will tend to counterbalance the increase in the quantity and quality of assets which takes place in the transformations of the productive process: hence money profits will decline, or even disappear, for profit consists in the rise in the net worth of assets. The rise in inventories and the decline in profits both cause a decline in production. The rise in inventories has a direct effect, in that "orders" usually originate in a desire to replace inventories that have been consumed, while the decline in profit, or rather in profit anticipations, will diminish the amount of "enterprise" — i.e. the profit-making, employment-giving, goods-holding activity. When prices are falling, it may be more profitable to hold assets in the form of money than in the form of goods. There is a strong temptation, therefore, for the capitalist to transfer his assets from the goods-form to the money-form. This means that he will wish to sell rather than buy; supply curves all move to the right, demand curves to the left, and the deflationary pressure is all the more increased. Since the act of giving employment is one in which a liquid asset (money) is exchanged for a non-liquid asset (the product of labor), the volume of employment depends very largely on the extent to which the administrators of capital are willing to hold it in the form of non-liquid assets. In time of deflation this willingness is bound to decline.

5. The "preferred rate of accumulation" is the sum of the rates at which the members of an economic system wish individually to increase their total "real" assets. ("Real" assets have to be measured by dollar assets divided by the price level of assets.) The actual rate of physical accumulation is determined mainly by technical opportunities, though of course political factors affect these opportunities, and the over-all monetary situation likewise affects production. Thus inflation may for a time increase, or deflation may decrease, the rate of accumulation above or below what is technically the most desirable.

Price flexibility is no answer to the problem, because it leads to further and further deflation. In terms of equation (1), an expected decline in prices leads to a decline in commodity preference (r_a) and to an increase in liquidity preference (r_m), and hence to a further decline in prices. This will go on as long as prices and supply of money are perfectly flexible: it is only when the chin of inflexible prices bumps up against the foot of inflexible money supply that the monetary Alice ceases to shrink.

The weakness of most economic analysis of the monopoly problem has been the failure to distinguish between *competition* and *deflation*. Competition, in the sense of the ability of superior processes and resources to displace inferior processes and resources, is an essential condition of economic progress, both from the point of view of the development of new techniques and from the point of view of the best allocation of existing resources. This is true whether the economy is individualistic or collectivistic: in an individualistic system the competition is more strictly "economic" — i.e. the sanctions which are employed to get resources out of the less desirable occupation consist mainly in economic disadvantages relative to other occupations. In a collectivist system the sanctions are more likely to be direct and political in nature — e.g. the "liquidation" of the Kulaks — but they still retain the essential character of "competition."

In an unregulated capitalism, however, "competition" is constantly threatening to produce "deflation" — a process which hinders economic progress and operates to prevent the fruits of "competition" from being enjoyed. The whole "protectionist" movement — using that term to cover the growth of monopoly, of industrial combinations and labor unions, of barriers to trade and of restrictionist policies of government — has two aspects, one beneficial, one malevolent. As the destroyer of competition, the protector of privilege, the preserver of the status quo against the innovator, it is, of course, almost wholly undesirable — I say "almost," because a case can be made against a too rapid rate of economic progress in terms of its social cost. But as a dyke against deflation the movement has much more justification. The movement cannot be dealt with, therefore, by mere exhortation or by pleas for a return to laissez-faire, unless a *better* method for tackling the problem of deflation can be devised.

Two illustrations may complete this part of the argument.

A deplorable feature of the economic history of the past eighty years has been the growth of protectionist commercial policies on the part of national states. The economist is apt to see this merely as a movement against competition — as indeed in part it is; a move on the part of vested interests to prevent a readjustment of the use of resources which might injure them while benefiting the whole. But were protectionism *merely* this, it would not be so universally popular. A study of the protectionist movements of the 1870's and of the 1930's indicates clearly that the greatest and most disastrous growth of protectionism (including such items as quotas and exchange control) came as a desperate attempt to isolate the national state from the deflationary floods which were engulfing the rest of the world. It is hardly an exaggeration to say that in the absence of deflation the protectionist movement in international trade would no longer be an unmanageable problem, for the strength of the opposition to Free Trade rises more from the fear of deflation than from any other source.

The second example is that of the "standard rate" of trade unions. It is one of the principal objects of Trade Union policy to establish a single wage rate for a given job over the whole competitive area, and to prevent the undercutting of this rate. It is true, as Dr. Simons points out, that this policy *may* lead to protection of special privilege and exploitation of the non-union or the less efficient worker, particularly where it is supported by the restriction of entry to a trade. But this is not the whole story. Restrictionism is not, quantitatively, an important aspect of trade union policy, though it exists and should be curbed. The standard rate, on the other hand, draws its support from workers and employers alike, because it is a bulwark against "destructive competition" — i.e. deflation.

One further argument should be noticed — one which has been used both in attacking and in defending combinations. It has been frequently observed that when price competition is restrained by combinations, it is replaced by "services" or "quality" competition, or by competitive advertising. There is something of a tendency among economists to denounce non-price competition and to praise price competition. We have already noted that price competition, when it leads to deflation, has serious social disadvantages. It remains to observe that the effect of non-price competition depends on its nature. Where the competition takes the form of quality differentials there is

much to be said for it, particularly in the field of labor. The "standard rate" can frequently lead to an ever-increasing quality of workmanship, where wage competition leads to a decline in productivity. It is not perhaps altogether an accident that relatively high price and money wage levels tend to go along with high standards of life and high real wages. The observation of Malthus that the backwardness and poverty of many areas was to be explained in terms of the limitation of the market, rather than in terms of population pressure, is well worth our attention, in spite of a hundred years of neglect. To what extent, for instance, have the highly flexible and competitive labor and commodity markets of the warm-temperate and tropical regions actually hindered their development by restricting the growth of internal consumption? It is not perhaps possible to give outright answers to these important queries; but one might well hesitate before recommending to the Southern States, for instance, a continuation at all costs of their supply of cheap non-union labor. Indeed, it is probable that the flexible wage rates of the South, far from enabling that unhappy region to raise its standard of life in competition with the high-wage, high-productivity regions of the North and West, have actually entrapped it in a treadmill of low wages, competitive belt-tightening, malnutrition and low productivity.

In the commodity field the case against competition in quality or services rather than in price is perhaps stronger. The eloquence of the consumption economists against unnecessary gadgets, superficial streamlining, and unwanted services is by no means vain, though one wonders sometimes how much of it is due to a streak of misplaced puritanism. It must not be forgotten, also, that technical progress to a great extent involves the creation of a better article, rather than the production of an old article for a cheaper price. It would almost seem sometimes as if the purists of price competition would rather ride in very cheap stagecoaches than in expensive pullmans! The problem of price versus services competition is often posed as if the only thing at issue were the maintenance of the *relative* price, or purchasing power, of the article in question. This, however, is by no means the whole story. Another question is also involved: whether the increased consumption which technical progress permits should come about through a fall in prices, incomes remaining constant, or through a rise in incomes, prices remaining constant, or through some

combination of the two. The case for rising incomes, as opposed to falling prices, is a strong one: a fall in prices is dangerous, in that it lowers profits while it is going on and also has a strong tendency to be cumulative. Rising money incomes, on the other hand, are almost universally favorable, both to consumption and to investment. I should not be prepared to argue, of course, that monopoly is the best way to protect society against falling prices, but it is folly to suppose that this protection is not needed.

The case for and against advertising must be judged in like terms. It may be argued with some force that advertising is an expensive, wasteful, and misleading way of expanding consumption. It should not be maintained, however, that there is no problem in the expansion of consumption, nor that the problem could be solved by putting the money spent on advertising to reducing prices. It is very probable that the fall in prices which might result if advertising were abolished would not of itself expand consumption sufficiently to prevent deflation and unemployment. Price cutting, therefore, as a general measure is no substitute for salesmanship, even from the point of view of society as a whole. Consequently, unless we have some alternative to advertising other than price cutting, the case against it largely falls to the ground. Advertising, that is to say, is but another aspect of the problem of the limited market, and the case against it is not that it performs no function, but that there may be better ways of performing the vital function than it serves.

It is not the purpose of this paper to expound in detail a general solution to the problem of deflation.[6] The lines of the solution are by now almost a commonplace among economists, for it is clear that any deflationary movement can be stopped by placing in the hands of the public, through the operation of the fiscal system, a sufficient volume of liquid assets. The main problem before us is how to translate this solution into politically respectable terms. It would almost seem as if two sets of reasons for any practical policy must be discovered — the right ones and the convincing ones. There is coming to be rather broad agreement among economists as to the necessity for a vigorous long-run anti-deflation policy. The reasons for such a policy have not, however, been translated into terms which sound reasonable to

6. I have outlined a possible solution to this problem in The Economics of Peace (New York, 1945).

the average voter or politician, and here is a real task for our middlemen of the intellect.

If we suppose, however, that a successful anti-deflation policy can be inaugurated, one of the main *economic* reasons for the monopoly and protectionist movement will have ceased to exist, and the attack on the "vested interest" or "special privilege" aspects of monopoly is likely to be much more successful. Take, for instance, the problem of free trade. The experiences of the war show that vast readjustments of resources between industries can take place relatively easily, if there is an inflationary movement going on at the same time. Hence the argument that the introduction of Free Trade will cause serious dislocations and transfers of resources falls to the ground, if only it is admitted that the introduction of Free Trade should be accompanied by an inflationary budget policy sufficient to offset the deflationary effects of tariff removal. It is only because the removal of a tariff leads to deflation that the "dislocation" argument has loomed so large. If there are other jobs to go to, the individuals displaced by the removal of a tariff have little cause for complaint; but when there are no other jobs to go to, when the removal of a tariff increases unemployment in general, as it would do in the absence of counterbalancing inflationary measures, then the case for protection remains unanswerable.

It must not be supposed, of course, that the removal of the specter of deflation would result in the collapse of the combination movement, whether in business, labor, or agriculture. The combination movement has broad sociological as well as economic roots. The associative process is important in its own right, for it is through association with others that an individual gains status. In the progress of society, moreover, the "skill of association" develops along with other skills, and the division of labor eventually produces the specialized "promoter" — the missionary, the paid secretary, the labor organizer, the lobbyist, the farm politician, the cartel promoter — whose principal task is the development of organizations, almost for organization's sake. The very fact that these promoters are successful, however, indicates that they are peddling a product which satisfies some basic human need — call it the herd instinct or what you will. Even if an anti-deflation policy removed the narrower economic functions of combinations, they would not thereby become functionless. Thus, even if it were no longer necessary for labor unions to prevent

wage deflation, they would still have important tasks to perform. They give a feeling of status and security to the worker. They are an essential element in industrial government, in the day-to-day adjustment and negotiation of the complex elements involved in the labor bargain. They are in part an outgrowth of the "domestic" character of the labor contract — a contract which owes its peculiar difficulties to the fact that it shares both the psychological subtleties of the marriage contract and the economic rigorousness of the commercial contract. The very complexity of the labor contract, therefore, almost necessitates some form of collective bargaining and industrial democracy in the settlement of grievances, and it is difficult to see how this end can be accomplished without free labor unions.

The monopoly problem, therefore, resolves itself into two elements: first, how to prevent deflation, and so undermine the principal economic justification for monopoly; second, how to distinguish in practice between the legitimate social functions of economic associations and their illegitimate, exploitive functions. It is clear that mere anti-trust policy is much too crude an instrument for dealing with so complex a problem; its failure to deal with the problem of the exploitive practices of certain labor unions, for instance, is not merely due to a whim of the courts but to a basic weakness in the anti-trust law. We cannot deal with the monopoly problem on the theory that all that is necessary is to break up combinations and restore the benevolent sway of atomistic competition. The associative forces in society too strong to permit the break-up of combinations, and the rule of atomistic competition, moreover, is by no means as benevolent as the neo-Benthamites would have us believe. It is evident that the solution lies with the prohibition of restrictive practices, rather than with the prohibition of organization as such. By contrast the older anti-trust policy would seem like an attempt to solve the problem of domestic quarrels by prohibiting marriage!

The problem of what practices to prohibit and how to prohibit them is a thorny one, to which no clear theoretical answer seems to emerge at present, but towards which the practical politicians have been blindly striving. It might be better for economists to attempt to clarify the problem of regulation instead of merely making deprecatory anti-trust noises on the sidelines.

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THE STATISTICAL PRODUCTION FUNCTION[1]

SUMMARY

INTRODUCTION: THE THEORETICAL FUNCTION

Despite considerable discussion of the meaning to be attached to statistical production functions, misconceptions continue to arise. The functions are often interpreted in a fashion quite unwarranted, in view of the imperfect markets and disequilibrium situations from which the data are derived and the limitations of the data as measurements. Two quotations will illustrate conclusions that go beyond the evidence:

> That the sum of the exponents for labor and capital (i.e., $k+j$) closely approximate unity or 1.0 [and that this] . . . has been found to be approximately true in virtually all of the other studies . . . strengthens the conclusion that the production function is homogeneous and of the first degree.[2]

> Under perfect competition we would expect labor's share to be equal to the value of k. The close approximation of k to W/P indicates that there was both a greater degree of competition than is commonly believed and also a tendency for the laws of distribution to be primarily determined by the laws of production. This close agreement between W/P and k and the near equality of $(k+j)$ to unity indicate that labor tended to receive its marginal product and that the production function was approximately homogeneous and of the first degree.[3]

Here the statistical results are held to support the propositions

1. I am indebted to Professors Ralph C. Jones and Kent T. Healy of Yale University for suggestions and criticism.

2. Daly, Patricia, and Douglas, Paul Howard, "The Production Function for Canadian Manufactures," Journal of the American Statistical Association, 38:179, 1943.

3. Daly, P., Olson, Ernest, and Douglas, P. H., "The Production Function for Manufacturing in the United States, 1904," Journal of Political Economy, 51:63, 1943.

that the production function is homogeneous and linear in degree,[4] and that there was a "greater degree of competition than is commonly believed. . . ." I do not believe that present statistical studies warrant these conclusions as to the nature of theoretical production functions or of actual competition.[5] It has been acknowledged that the statistical function is not the same as the theoretical one, and there have been important statements on the relationship between them;[6] but there is still too little recognition of the gap separating the theoretical formulation from the statistical product.

The experimental determination of a theoretical production function would require observations on the product obtained with a given quantity of capital when the labor employed was varied, for each of a series of quantities of capital. Several observations would be made at each combination of labor and capital. For the purpose of studying the degree of the function at least one set of

4. Roughly, a function is homogeneous if all terms are of the same degree. The degree of such a function is equal to the sum of the exponents of the variables in any term. In a linear homogeneous production function an increase of each of the factors of production in a certain proportion results in the same proportionate increase in the product. If the degree is greater than unity, the product increases in larger proportion, and *vice versa*.

5. The principal argument for such conclusions is the frequency of "favorable" statistical results. In at least five of the cases listed as favorable by Bronfenbrenner ("Production Functions: Cobb-Douglas, Interfirm, Intrafirm," Econometrica, 12:42–43, 1944), there are differences between the computed and the actual share of labor of a size that sometimes the authors themselves think considerable. (Douglas, Paul Howard, The Theory of Wages, New York, 1934, p. 198; Handsaker, Marjorie L., and Douglas, P. H., "The Theory of Marginal Productivity Tested by Data for Manufacturing in Victoria," this JOURNAL, 52:242–244, 1937–38; Bronfenbrenner, Martin, and Douglas, P. H., "Cross-Section Studies in the Cobb-Douglas Function," Journal of Political Economy, 47:776, 1939; Gunn, Grace T., and Douglas, P. H., "Further Measurements of Marginal Productivity," this JOURNAL, 54:401, 420, 1940; Gunn and Douglas, "The Production Function for American Manufacturing in 1919," American Economic Review, 31:73, 80, 1941.) The consistency that has prevailed may be explained by the fact that all these functions are averages, which tends to conceal variation, and the possibility that departures from the linear homogeneous function of considerable economic importance may often be too slight to be detected by such a crude statistical technique.

6. Bronfenbrenner, M., and Douglas, P. H., "Cross-Section Studies in the Cobb-Douglas Function," Journal of Political Economy, 47:780–782, 1939; Reder, Melvin W., "An Alternative Interpretation of the Cobb-Douglas Function," Econometrica, 11:259–264, 1943; Bronfenbrenner, M., op. cit., pp. 35–44. Marshak, Jacob, and Andrews, William H., Jr., "Random Simultaneous Equations and the Theory of Production," Econometrica, 12:143–205, 1944, appeared after this article was written.

the labor-capital combinations would represent variation from the usual proportions (if those were known) by equal small percentage changes in each factor. (I shall not discuss the difficulties invo ved in establishing units of measurement for "labor" and "capital.") If the long-period function were sought, at each combination the form and manner of utilization of the factors would be that which was technologically the most efficient for those quantities.

A change in the quantity of capital would neither alter the proportions of new to old equipment nor reflect new technological developments. Changes in the form of capital would be only those previously known to be possible, but thought undesirable before the change in the size of the enterprise or the proportions of the factors. Similar restrictions would be placed upon the nature of changes in the use of labor.

Functions for various shorter periods would have to be obtained by limiting the degree of adaptation of labor and capital in accordance with the supposed period of time available and the duration of the changed level of output.

Such material would permit us to fit marginal productivity curves directly and to study the degree of the function by direct observation. At the same time we could fit a surface to all the observations, obtaining, supposedly, a general production equation from which the marginal productivity curves could be derived. By checking back against the curves obtained directly we could confirm our results or be warned of the inadequacy of the experimental data or the functions used.

The method of least squares was developed for use in connection with experiments of this type. Our data, however, are not the results of scientific experiments, but of management decisions. Each of our observations, if management is all-wise, will represent the ideal amounts and proportions of labor and capital under the circumstances, and will not be changed until the circumstances change. Consequently, our range of observations covers only a small portion of the whole production surface, and such dispersion of observations as we obtain is the result of changing conditions (which may involve changes in the function itself), delayed or incomplete adjustment, or errors on the part of management. The nature of the adjustments varies from observation to observation: sometimes it is a short-run reaction to a sudden stroke of good fortune — or bad; sometimes a long-run adjustment to a situation developing as anticipated. Under

such circumstances the method of least squares will not give us results analogous to those from experiment.

IMPERFECT MARKETS AND DISEQUILIBRIUM SITUATIONS

Perfect competition and static equilibrium would be excellent substitutes for experiment, but we cannot therefore assume that they exist. Under such conditions the degree of the production function for the firm would be the same whether it was taken in terms of physical units or in terms of value quantities, since the two forms of the function would differ only by a constant factor representing price relationships. In the absence of perfect competition, the value function for the firm may be different in degree from the physical function, and the transformation from one to the other is less simple. For instance, the effect of imperfect output and input markets is generally a diminution of the degree of the value function below that of the physical function. Also, the value function is more comprehensive than the technological production function; the demand function for the product and the supply functions for the various inputs are included.

Under conditions of perfect competition in input markets and long-run equilibrium (but permitting the existence of rents and specialized agents), a statistical cross-section function measuring value-product can give the usual "intrafirm" marginal value productivities of theory.[7] Since average and marginal net value productivities will be equal to the common input-price paid by each firm for a given input, the statistical production surface, if a plane, will be tangent to the value-product surfaces of the several firms and will measure marginal value productivities to each firm. The Cobb-Douglas function is not strictly appropriate, not being a plane. (A satisfactory statistical approximation may obtain, even though not all conditions are perfectly fulfilled, if the departures are distributed properly.)

Unfortunately for the attempt to show the prevalence of competition by the correspondence between labor's actual share and the share computed from statistical production functions, this proof applies generally only to a function measuring value product,[8] but

7. Bronfenbrenner, op. cit., pp. 35–42.
8. Cross-section functions generally measure value product. Even if the product is physically standardized, an added condition, either identical production functions (in the relevant range) for the various firms or perfect

such a function gives no information about monopolistic exploitation of labor.[9] Under *either* perfect or imperfect competition in output markets, assuming perfect factor markets, the equilibrium wage will equal the marginal value productivity of the worker (though under imperfect competition this will be less than the marginal physical productivity multiplied by the price of the product), and the share of the product going to labor, as calculated from the Cobb-Douglas function, will equal k. Results often interpreted as confirming the assumption of a considerable degree of competition are as likely to be obtained under imperfect competition in output markets.

Perfect markets imply identical prices for identical inputs, but even in the same community these prices show considerable variation. Moreover, the data refer to nonhomogeneous classes of inputs, like "labor," and the proportions of the different kinds of labor vary between firms, industries, and points of time. For both reasons the marginal value productivities of "labor" and "capital" will vary, not to mention average net value productivities. When we add the prevalence of disequilibrium, it appears that the statistical function, whether it be a plane or not, is far more likely to cut through the production functions of the several firms than to be tangent to them. Moreover, no special preference can be given the

competition in output markets, is usually required if a cross-section function is to measure intrafirm marginal physical products.

If all production functions are identical, the change in physical product from one observation to another will be the same as if a single firm changed its use of the factors in the same way. If they are not, perfect competition in output markets will make the measurement of intrafirm marginal physical products possible. Marginal value productivities will be equal to marginal physical productivities multiplied by the same price; the slopes of the physical production surfaces will be the same for each firm, and a plane will be tangent to each of them. This is possible in an imperfect market only if the equilibrium marginal revenue is the same for each firm. If it differs, having the same marginal value productivities will not imply the same marginal physical productivities, and a statistical production surface of constant slope, or even of simply changing slope, will not necessarily be tangent to the several firms' physical production surfaces. (Of course, the statistical surface may give us a satisfactory "average" of the surfaces of the various firms, if the deviations are properly distributed.)

9. The latter point was noted in 1939 by Bronfenbrenner and Douglas, op. cit., p. 768, and lately by Reder, op. cit., p. 260, note 5. In 1941, Gunn, Grace T., and Douglas, P. H., "The Production Function for Australian Manufacturing," this JOURNAL, 56:127, correctly restricted the meaning of close agreement between k and W/P to conditions approximating perfect competition in the *factor markets*.

three-dimensional plane, $P = b + kL + jC$, merely because it provides a surface of constant slope that would be useful if we had long-run, perfectly competitive equilibrium.[1]

We turn to the contrast between static equilibrium and a dynamic economy, in which neither the adjustment within a given production function nor the function itself remains constant. Even if the physical production function remains unchanged, changing conditions cause continual change in the best adjustments of output and inputs. The fluctuation of the level of the national income requires continual readjustments of decisions. There are shifts in consumer attitudes, short-run, whimsical variations or long-run trends, and shifts in the supply conditions of the inputs. Whole economics may show secular trends; and in this case, especially, it is probable that changes in the underlying production functions will occur at the same time.

Both short and long-run adjustments are continually required. A lag is inevitable between the development of a new situation and the response that, it is hoped, will restore at least short-run equilibrium. Frequently a new situation arises before the adjustment to the old is completed. At any point in time many adjustments will be incomplete and even short-run disequilibrium will be common.

Delayed adjustment is not the only reason why actual observations will not show the absolute profit-maximizing adjustments for the firm envisaged by static equilibrium theory. The errors of management or the difficulty of the problem may contribute to the same result. We must expect faulty estimates of demand, costs, and marginal productivities. Of course, if all that we require of an equilibrium situation is that it be profit-maximizing in the light of the management's rough estimates, this observation is of no importance.

A second reason is conflict between the short-run and the long-run. One firm may purchase a part of its materials from some source other than the one currently the most economical, to prevent long-run losses from dependence upon a single source of supply. Another may pursue short-run advantage without thought of long-run consequences. What type of decision may be preponderant in the data used for a given statistical function requires special study.

Third is divergence between the interest of the management and the interest of the firm. In these cases (which may be charac-

1. Bronfenbrenner, op. cit., pp. 39–40.

teristic under the modern corporate form of organization), the principle of maximization does not lead to maximum profits for the firm.[2] The management may seek perpetuation of office, power, and size for the sake of power. As long as the over-all profit situation is "satisfactory," unprofitable lines and branches may be continued with gross disregard of marginal adjustments. The extra effort and risk involved in experimenting may be real costs to the management (as distinct from the firm) and be important factors limiting the precision of adjustments.

Fourth are the costs to the firm itself of making adjustments — extra accounting expenses, the costs of market estimates, and even higher salaries for a progressive management. In a dynamic economy, the cost of attaining perfection is a factor preventing its attainment. Admittedly rough adjustments to specific situations may be profit-maximizing over a period of time. This is a factor that static equilibrium theory generally need not consider, but in practice it tends to prevent attaining the adjustments of static equilibrium.

In short, the best adjustment of the agents of production is probably never reached. When both firms and industry are stable in size and character, long-run adjustments will be few. In this situation we may obtain a short-run production function, showing the responsiveness of output to short-run adaptations; but we cannot expect to show the long-run responsiveness of output to long-run adjustments.[3]

A function based upon short-run adjustments may be different in degree from one based upon long-run adjustments, since the possibilities are different in each case. Given a linear long-period function, short-period reductions in output from a "normal" level are unlikely to release factors of production in the same proportion, and hence may indicate a more than linear function. The return expansion from "subnormal" to "normal" rates of operation will have the same effect upon the degree of the function. The opposite situation occurs when output is expanded beyond "normal" and later contracted. Consequently, if the data cover such a group of

2. Altruism may also prevent attaining the maximum profit.

3. This point was suggested by Professor Jacob Viner's seminar discussion of statistical estimates of import elasticities

For many dynamic problems the short-run function is relevant. Statistical techniques may be of considerable use in estimating these short-run relations.

firms or industries or such a period that the preponderant comparison is between subnormal and normal levels, the estimate of the degree of the function may tend to be higher than if the preponderant comparison had been between prosperity levels and normal levels. Time-series studies may average out these particular effects by covering full cycles, but still the short-period function may differ in degree from the long-period function. In any study based upon short-period adjustments, the relative importance of the factors will be altered, added emphasis being given to the factors more quickly varied, such as labor.

When the firms and the industry are not stable, the observations represent a compound of adjustments to meet immediate situations with preparations for the more remote future. The result will be neither a short- nor a long-run function.

Changing conditions also mean changes in the production function itself. Transitions may be from one function to another, as well as from one point to another along a given production surface. There are changes in techniques of production, in products, and in the proportions of the various products to the total output. Changes in the conditions of demand for the output or supply of the inputs will change the function in value terms. The revision of an unsatisfactory price policy may alter the relationship between sales and outlay. Either the physical or the value function may change as the result of errors in previous adjustments. Economic theory can be timeless, in the sense that mistakes can be completely eradicated; in the real world mistakes are often left as a burden upon the firm, affecting the future organization of production.

All in all, the typical observation represents a transition stage — a disequilibrium condition (except possibly in a short-run sense), rather than an observation on an organization perfectly adjusted to a given, permanent situation.

In the absence of the special conditions giving a statistical production function that is tangent to the functions of the several firms, the best hope for an approximation of intrafirm marginal productivities lies in such selection of cases that the observations may come from the same or similar production functions. We must seek the greatest possible degree of homogeneity. In general, time-series studies may be the more easily confined to a single industry or firm; but unless the period is one of great stability, there may be shifts in the underlying function that compare with

the differences between functions that may exist in cross-section studies. If so, the result may be merely a crude statistical average. (If the shifting is regular, the time-removal methods of statistical demand analysis may roughly separate the shifting function from the short-run adjustments to it.) Cross-section studies in a single industry are affected by the same difficulties, for progress does not come at the same rate to all. If they ever had the same function, it is likely that different firms will be in different stages of transition from one function to another. Besides differences in products, physical production functions will differ between firms, because of differences in the techniques of production (the result of the age of the enterprise and its equipment, or of efficiency, initiative or the possession of trade secrets on the part of certain managements). Differences in market situations for inputs and outputs will cause differences in value functions.

Cross-section studies combining observations from different industries are especially likely to be dealing with different production functions. Women's dresses and steel plate will hardly have identical functions. As we move from one observation to the next, the kind of product changes, not merely its quantity. The different products of the different industries are made to seem additive by measuring them in value terms; statistical production functions then become summary statements of the way in which the output of value changes as inputs are altered from industry to industry. Reder's term, "interfirm," is apt.[4]

If each firm or industry had the same production function, the combination of observations on different firms or industries might make possible the statistical determination of a true short-run function, even in the absence of perfect input markets and long-run equilibrium. Otherwise we obtain an average "summarizing" a hodgepodge. In the absence of knowledge from other sources that we are dealing with observations on the same function, it is dangerous to assume that repeated agreements between the average results obtained from such data indicate the existence of a single underlying function. There may be a complex of different functions, retaining about the same average characteristics. That averages from distributions that may include non-homogeneous material agree substantially with each other does not warrant us in believing that each distribution contains homogeneous material

4. Op. cit., p. 261.

or that they are alike with regard to any attribute but their averages.

It may be that certain characteristics of production functions do not vary — for the sake of argument, let one of them be the degree. If so, the statistical function may have precise meaning with regard to this characteristic, for in this respect the data are homogeneous. In long-run equilibrium under perfect competition the relevant portions of the production functions of the various firms and industries would be linear and homogeneous. Under such conditions the statistical result, as to degree, might be descriptive of a characteristic actually existing. Since these conditions do not prevail, and we do not know that there are such invariant properties of the production function, we cannot say whether we have described a uniform underlying function, or merely averaged observations from many different functions.

Under the circumstances, not much confidence can be placed in conclusions from statistical functions that "the production function is homogeneous and of the first degree."[5] That the statistical function is linear, on the average, does not necessarily imply that the true production functions of the individual industries are.[6] The studies of industries or groups of industries have indicated variation.[7] In the cross-section studies each industry has generally been weighted equally, regardless of its size or importance.[8] If there should be a correlation between the size of the industry and advantages of scale, weighting in proportion to the size of the industry might result in a different degree for the average function.

Other objections can be raised.[9] The use of the first regression equation has not been satisfactorily justified. Though it be proper

5. Daly and Douglas, Idem.

6. Cf. Clark, John M., "Inductive Evidence on Marginal Productivity," American Economic Review, 18 451, 1928

7. Cobb, Charles W., "Production in Massachusetts Manufacturing, 1890-1928," Journal of Political Economy, 38:705-707, 1930; Bronfenbrenner and Douglas, op. cit., pp. 765-766, 774-777, 783; Tintner, Gerhard, "A Note on the Derivation of Production Functions from Farm Records," Econometrica, 12.26-34, 1944, and "An Application of the Variate Difference Method to Multiple Regression," Econometrica, 12:97-113, 1944.

' Tests of the significance of departures from linearity were applied only in the second and third of these studies, generally with negative results.

8. Gunn and Douglas, "The Production Function for American Manufacturing for 1914," Journal of Political Economy, 50:601, 1942.

9. Clark, op. cit., pp. 449-467; Slichter, Sumner H., "Economic and Social Aspects of Increased Productive Efficiency" (discussion of Cobb and

for estimating P,[1] it is not designed to give the best estimates of k and j ($k+j$ gives the degree of the function).[2] As to the function being homogeneous, there has hardly been a real test. Any function of one term is homogeneous; the data have not determined this property except in the sense that good fits have been obtained.

THE DATA AS MEASUREMENTS

We turn more specifically to the characteristics of the data available (often themselves traceable to the dynamic character of the economy). Most data are for industries, rather than individual firms. This reduces the chance of dealing with a single underlying function. Besides, the industry function need not be the same as those for firms; in general, it will reflect external economies and diseconomies, as well as internal.

The factors of production which we consider are nonhomogeneous classes containing widely varying agents. This simplifies handling the data and avoids the loss of degrees of freedom, by limiting the number of variables, but calculating marginal productivities for such groups of agents gives but the crudest average result.

Some agents of production are not included in the functions. Raw materials, power, circulating capital and government services have been omitted from one or another of them.[3] For other agents the measures are most inadequate. Entrepreneurship is difficult to define, yet the inclusion of entrepreneurial services may be vital to the determination of true advantages of scale. Apparent advantages or disadvantages may result from inability to vary entrepreneurship along with the other factors. Our data include entrepreneurship to the extent that management performs entrepreneurial functions and is included in the labor series. Using

Douglas, "A Theory of Production"), American Economic Review, 18 (supp.): 166–170, 1928; Durand, David, "Some Thoughts on Marginal Productivity, with Special Reference to Professor Douglas' Analysis," Journal of Political Economy, 45:740–758, 1937; and Mendershausen, Horst, "On the Significance of Professor Douglas' Production Function," Econometrica, 6:143–153, 1938.

1. Gunn and Douglas, "The Production Function for American Manufacturing for 1914," pp. 601–602.

2. Tintner, "A Note on the Derivation of Production Functions from Farm Records," p. 29.

3. Slichter, op. cit., pp. 168–169; and Durand, op. cit., p. 755.

The omission of a factor which aids in determining the product raises the exponent of labor, if it is more highly correlated with labor than with capital, and *vice versa*. (Bronfenbrenner and Douglas, op. cit., p. 768.)

physical data, the addition of a vice-president counts as little as the addition of a stock clerk. Using value data, with salaries included in the bill for labor, entrepreneurial functions will be represented (though inaccurately) by the larger salaries received by the management. (For this purpose bonuses should be included in the labor bill.) Those entrepreneurial efforts which are rewarded by the receipt of dividends will be missed. As between different firms or industries, or at different times, apparent uniformity in the total labor quantity or labor bill may conceal variations in the proportion of management to labor that cause variation in product.

The measurement of capital as a factor of production is the most difficult. For comparison with the annual product and the annual use of labor, we should like a measure of the annual use of capital (including land). Instead, we must use the quantity of capital goods or the value-capital invested. For the Cobb-Douglas functions, $P = bL^kC^j$ or $P = bL^kC^{1-k}$, it can be proven that the determination of the exponents is unaffected by the use of the quantity of capital assets instead of the annual services, if the services are in constant proportion to the quantity of the assets.[4] But the annual services need not be proportionate to the assets available. We work with the capital *available* for use, not with the actual *use* of capital.[5]

The labor series is a better measure of the quantity used, though using simply the number of workers takes no account of variation in hours. In value terms, the total wage and salary bill reflects variations in activity more fully than the usual physical series, the number employed. (It also reflects higher overtime rates.) Since the labor series corresponds more closely to the quantity used than the capital series, it correlates more closely with output, which contributes to the observed tendency for the coefficient of labor to exceed the coefficient of capital. Both time-series and cross-section studies may be affected by failure to measure the full variation in the use of capital, but such a result is more likely in the case of time-series studies, since year-to-year variation is probably larger than the variation between firms or industries in a given year.

    4. The value of *b* is affected.
    The principle holds for the substitution for any of the series of a series proportional to it.
    5. Cf., among others, Cobb and Douglas, op. cit., p. 146; Clark, op. cit., pp. 451, 459–461; and Mendershausen, Horst, op cit., p. 145.

In value terms the problem may be posed as a question of the capital available rather than the capital used. It is the capital sunk in the business which concerns the businessman, and its unresponsiveness to cyclical variation is a part of his problem. To be sure, a different function should result than if the problem had been posed in terms of the capital used.

Our measures of the quantity of the capital assets are themselves unsatisfactory. It is well known that comparisons of capital figures are hazardous. Differences in accounting practice range from failure to keep capital accounts to overvaluation of the assets, and from failure to provide for depreciation and obsolescence to excessive charges for these purposes.[6] The difficulties will generally be greater for studies that use data from a variety of industries. Cross-section studies are at a disadvantage, since they are not so readily confined to single industries as time studies; but the latter encounter the possibility of methods and classifications changing through time. Differences in classifications may be less serious when a total capital series is used than when only part of capital is used or a distinction is desired between the components of capital. The larger the magnitude of the class, the less the significance of variations at the borders, unless biases in sub-classes cumulate.

All measures of capital as such, rather than of specific instruments, must rest upon a summation of value figures. Price changes render such totals misleading as an indication of the quantity of physical capital. With time series, apparent changes in the total amount may be due to replacements at other than the original prices; as for cross-section studies, firms or industries that purchased equipment during a period of high prices will appear to have more capital than those that purchased during a period of low prices. Corrections might be made by the use of indices of capital goods prices, but ideal results are not likely.[7] When firms change ownership, the new owner is quite likely to record as the value of the assets the price paid for the going concern, which need

6. Bronfenbrenner and Douglas, op cit., pp. 770–771.

Overestimates, as when there is watered stock, will cause no trouble in estimating the exponents of the function, if the error is constant in proportion. Trouble will come from differences in the degree of overestimate between firms, industries, or points in time. Time-series studies of a single firm are subject to difficulties, if the degree of overvaluation diminishes as the "water" is squeezed out.

7. See Douglas, op. cit., pp. 122, 168–169; and Handsaker and Douglas, op. cit., p. 23.

not conform with original cost, reproduction cost, or present physical valuation.[8] Of course, if we are concerned only about the value-capital placed in the enterprise, uncorrected value figures are appropriate.

Cyclical changes may affect the value-product function quite aside from their effects on the physical series. The labor and product series will show added variation because of the cyclical variability of their prices; the capital series will be little affected, since capital values are largely past values. In time-series studies the exponent of labor may be increased and that of capital diminished on this account. In the case of cross-section studies the relations of labor and capital to each other and to the product will differ between good years and bad. Since some firms and industries will be affected more than others, this may affect the statistical functions obtained.[9]

Omissions from capital accounts are frequent. Many expenditures which will yield their return in future years are not recorded as capital expenditures, as when new installations are recorded under the heading of "maintenance, repair, and operations."[1] Both time-series and cross-section studies are affected, particularly because these omissions exist in different degree in different observations.

The question of depreciation (including obsolescence) is particularly troublesome. Statistical production functions from either

8. Bronfenbrenner and Douglas, op. cit , pp. 770–771.
9. In the cross-section studies of the depression years 1904 and 1914 the exponents of labor were less and those of capital greater than in the other United States studies (Gunn and Douglas, "The Production Function for American Manufacturing for 1914," pp. 596–597, 601; and Daly, Olson and Douglas, op. cit., pp. 62–63.)
1. Business Week, September 4, 1943, p 8.
In 1930 General Motors reorganized some of their activities, charging the cost to the operations of that year. (General Motors Corporation, Annual Report: Year Ended December 31, 1930, p. 7.) E. D. Kennedy says that Willys-Overland's low profits in 1926 were ". . . caused largely by the expense of shifting from the Willys-Overland to the Whippet lines. . . ." (The Automobile Industry, New York, 1941, p. 186.)
Research expenses are frequently charged against current income, though extraordinary expenses have to be capitalized for tax purposes. Under wartime tax rates some companies have sought to charge as expenses research expenditures that used to be charged to capital, and others, that had deficits in peace years, to capitalize expenditures made in the 'thirties, in order to be able to charge amortization against current income. (Business Week, November 13, 1943, p. 7.)

depreciated or undepreciated capital series have shown considerable consistency. In the cross-section studies of Canadian manufactures, Miss Daly and Professor Douglas compared two years (1923 and 1925) for which the fixed capital data are undepreciated cost figures with two (1935 and 1937) for which depreciation was deducted, being apparently unaware of the change.[2] The results for the two pairs of years differ little, even when fixed capital is the only capital series used. We need to know whether variation in the treatment of capital conceals differences among production functions or whether real similarities persist in spite of it.

In a static situation, with the cost value of the equipment discarded and removed from the books equal to the annual depreciation charges, there is no need for distinguishing a depreciated from a non-depreciated capital series. Moreover, if the depreciated capital series is a constant proportion of the undepreciated series, either can be substituted for the other in the Cobb-Douglas functions without affecting anything but the constant term. Perhaps, in the Canadian manufacturing study, the proportion of depreciated to undepreciated capital was about the same in each industry; but a series of fixed capital asset values minus depreciation can not generally be expected to be proportional to a series of fixed capital asset values without depreciation subtracted.

An undepreciated fixed capital series will rise, neglecting revaluations of capital assets, whenever capital expenditures exceed the cost of discarded equipment. For the depreciated series, capital expenditures must exceed depreciation charges, plus the (scrap) value of discarded equipment. If we assume all items to be depreciated to zero scrap value, we can study the behavior of the two series by comparing the cost of discarded equipment with charges for depreciation. Both trend and cyclical influences may lead to varying behavior. First, let us assume that equipment is discarded as soon as depreciation charges are no longer entered against it. If the trend is upward and depreciation

2. Op. cit., pp. 179–180. The Canada Year Book, whence their data came, reports the Census of Manufactures figures without warning that prior to 1931 the cost value of land, buildings, machinery and tools was requested in contrast to present value, or cost less depreciation (plus any increase in land value), in 1931 and following years. (Letter from the Bureau of Statistics.)

The series of the total number employed was also affected by changes. (Canada, Dominion Bureau of Statistics, Canada Year Book, 1938, Ottawa, pp. 448–449.)

rates and the composition of capital do not change, there will be a tendency for annual depreciation charges to exceed the cost of the equipment discarded; for depreciation charges will be based on the current and largest total of capital, while discards will be more or less in relation to the smaller quantity at an earlier date. The undepreciated series tends to rise the more rapidly.[3] Conversely, if the trend is downward, there is a tendency for annual discards to exceed depreciation charges, causing the undepreciated series to fall the more rapidly. Of course, discards are not likely to be regular from year to year, any more than the original purchases were. As capital expenditures vary cyclically, discards will show a similar pattern, smoothed somewhat by the fact that various items have different lengths of life. In some years the cost of discarded equipment may exceed depreciation charges, even though the trend of the fixed capital series is upward, and *vice versa*.

Actually, equipment often remains on the books long after being depreciated to scrap value. Sometimes it has a certain physical effectiveness; sometimes it is simply that no action has been taken about its disposal. An undepreciated capital series may tend to grow through time, regardless of the trend of the depreciated series, merely because useless items have not been removed from the books. When disposal does occur, it may be at irregular intervals, causing sudden movements to appear in the series, with little reference to the quantity of effective equipment at hand.[4] The depreciated series may be reduced and distorted by the depreciation of assets to scrap value before they are ready for disposal.

3. If we also assume (1) that all items of capital equipment are acquired on the first day of the year, (2) that all disposals and charges to depreciation take place on the last day of the year, (3) that all fixed capital has the same length of life (n years) and is depreciated at the same rate, on a straight-line basis, and (4) that each year capital expenditures (new and replacement) exceed the capital expenditures of the preceding year, we may be more definite: annual depreciation charges *will* exceed annual discards. Each year the oldest and smallest increment of capital equipment is discarded, while n increments of capital equipment, each other one larger than the one to be discarded, are depreciated at a rate of $1/n$. If annual capital expenditures level off, discards will be less than depreciation charges until the total capital series has ceased to rise, when they will equal annual depreciation charges.

If each year capital expenditures are less than in the preceding year, discards will exceed annual depreciation charges.

4. The effect upon a depreciated capital series will be much less, as only salvage value remains to be removed.

A tendency to keep old equipment in use in bad times, postponing replacements until good times, renders the undepreciated series less sensitive to the business cycle than the depreciated. If depreciation is charged at the same rate in either period, the latter will fall in years of few replacements.[5] Of course, charging the same rate regardless of actual wear tends to reduce the capital figure excessively in years of depression and insufficiently in years of prosperity.

To sum up, the undepreciated series probably tends to increase with the age of the firm or industry (due to failure to remove old equipment from the books), to emphasize the influence of secular trend, and to be relatively insensitive to cyclical variations. Also, changes in the proportions of old to new equipment need not be revealed by movements in its cost-value total. On the other hand, overdepreciation may render the depreciated capital series an underestimate, and it may have a distorted cyclical pattern. For time-series studies using time-removal methods, differences between the trends of these two series may not matter much, but differences in year-to-year variation do. For cross-section studies, differences between the two series may be important, since they will not retain the same proportion to each other in the various firms and industries, due to differences in age, accounting practices, secular trend and cyclical position. In general, when the data permit a choice, the depreciated series has been preferred. When studying the value-capital invested in the enterprise, this decision seems appropriate. For the purpose of approximating a physical production function, the inadequacy of the depreciated series as a representation of the effectiveness of equipment must be considered, along with the possibility that well maintained equipment may lose little in physical effectiveness.

5. There may be a tendency to overestimate depreciation during prosperity and underestimate it during depression. This was not unusual in this country before the First World War and the passage of the corporation income tax law.

Perhaps exceptional was General Motors' reduction of $92,710,000 in the gross book value of idle plant on December 31, 1932. This was charged against reserves for depreciation, leaving the net book value unaffected. In this case, only the undepreciated series would reflect the existence of idle plant, and later reveal the increase in capital in use as plant became active and was written up to current value, with a corresponding increase in reserves for depreciation. (General Motors Corporation, Annual Report: Year Ended December 31, 1935, pp. 9–10; and 1933, p. 8.)

Lastly, we generally measure capital by an inadequate sample — one day out of the year. This is usually the same day for different industries or firms, although its representativeness will not be the same for each.[6] If a single day must be used, it should be carefully chosen with respect to seasonal and trend movements in each firm or industry. In time-series studies of a single industry a date taken at random (if the same each year) will probably have less effect upon the results than in cross-section studies of different industries. In the latter case, the proportions between labor, capital and product may be directly affected by differences in the level of seasonal activity. In time-series studies the magnitude of the item is less important than its variation through the years. The latter need not be much affected, unless the sample falls near the seasonal peak or trough (making it particularly sensitive to small variations in the seasonal pattern) or the level of the series is sufficiently affected by a poorly chosen date to alter the proportionate variation appreciably.

Using as a date for the capital sample the dividing point between the years for which labor and product are reported is particularly troublesome, yet the capital data available are commonly reported as of the last day of the year.[7] The practice of correlating the year-end figure only with data from the preceding period has not been justified. If the capital series increases by the same percentage annually, substituting "next year's" capital for "this year's" will not affect the exponents of labor and capital, for the alternative capital series will be proportionate. For any other type of behavior such substitution may affect the exponents. In cross-section studies, if the data are available, one might interpolate to obtain an estimate of the capital on July 1. With time-series studies, interpolation tends to reduce the exponent of capital by reducing the variability of the capital series (already too little variable).

The time-lag in production raises new problems. For some theoretical purposes it may be neglected, on the assumption that production continues at an even rate. Actually, the process changes

6. In the case of entries and exits, a single figure for the year either ignores the change or fails to take into account the fact that less than a year of service is available from the capital.

7. United States, Department of Commerce, Bureau of the Census, Abstract of the Census of Manufactures, 1919, p. 8; Canada, Dominion Bureau of Statistics, Census of Industry Instructions (current copy received in 1939).

both in rate and in character. The proportion of a year's inputs that should be related to the product of a given year varies between firms and industries and between years. Labor may be used to produce capital rather than current product, as when inventories are built up, machinery is built within the plant, or the plant layout is rearranged, with the result that the same expenditure is reflected in both labor and capital series. Of course, not all additions to capital are included in the capital series. In other cases the capital accounts include items not yet ready for use — partially completed plant, new installations, etc. The greater the degree of integration, the more likely such developments.[8]

In cases such as these, though the capital item is commonly used with the output of the same year, it is not a good representation of the equipment available for the production of this output, unless errors happen to compensate. With time-series both trend and cycle make this unlikely, while in cross-section studies these and other factors cause variation in the proportion of the several capital figures that represents assets available for the production of current output.

Such considerations may help decide what to do with an end-of-the-period capital series. For instance, in the automobile industry of the United States and Canada there is a pronounced seasonal pattern and an annual model change. During the 'twenties the new model year began early in January. Census returns for the calendar year[9] mean a December 31 capital figure. Since preparations will be well under way for the new model, this represents substantially capital available for use during the following year, though it may be an underestimate, particularly when the new

8. Excess capacity is constructed in advance of the need for it, or new equipment is prepared to be used in producing a new model or product at a later date. Early in 1928 General Motors developed a complete experimental motor plant to test machinery, etc. needed in the production of their new six-cylinder Chevrolet, to be introduced at the end of the year (General Motors Corporation, Annual Report: Year Ended December 31, 1928, pp. 8–10.) In the same industry, rough iron castings for die forms are generally aged up to six months before machining. (Business Week, October 9, 1943, pp. 27–28.) If the dies are prepared within the firm, the capital accounts may increase long before the dies are ready. Moreover, for some time before the first output of the new model the new capital may be in use, but working on parts and subassembly and contributing nothing to the current product.

9. The calendar or nearest business year is requested. (United States, Abstract of the Census of Manufactures, 1919, p. 8; Canada, Census of Industry Instructions.)

season is late. During the 'thirties the season was well under way at this date, but not yet at its peak. Presumably the capital figure then represented the capital available for use during the production year already under way. In either case, we may prefer to use the year-end capital figure with the following calendar year rather than the preceding one. On the other hand, if the seasonal peak had been passed and the new upturn was not due for some time, perhaps the year-end figure would be most satisfactorily used with the data for the preceding calendar year. Naturally such adjustments are makeshifts, accepted only because more appropriate capital data are not available.

These are some of the ways in which our measurements and the situations in which they are taken fail to meet the conditions required if the statistical production function is to be an approximation of the usual theoretical function. We are not dealing only with errors in the measurement of the same thing, which might be expected to compensate, but also with measurements of many different things and the failure to measure what we set out to. But it is well to emphasize that the argument is not intended to suggest that the statistical production function is of no importance. The statistical function represents relationships that prevail in a dynamic, disequilibrium economy, an economy in which time is consumed in making an investment, and in which value-capital must be invested before physical capital is ready for use, and remains invested even though the physical capital is not fully used. The statistical function would be more useful if its meaning could be more precisely defined, and if we had more varied experience with it. We need to obtain results that do not check previous results, and find out why, as we need to know from experience the effects of including or excluding certain items in our series, the differences between the behavior of physical and value product functions, etc. With the accumulation of experience and knowledge the time may come when we shall be able to interpret these functions with confidence.

<div align="right">VICTOR E. SMITH.</div>

WELLESLEY COLLEGE

THE KEY CURRENCY PROPOSAL

SUMMARY

I. Three approaches to the problem of international currency stability, 563. — II. What is a key currency? 567. — Importance of non-key currencies, 567; of stable relations between currencies, 569. — Other postwar currency problems overlooked, 570. — Uncertainty regarding proposed stabilization agreement between United States and Great Britain, 571. — The problem of exchange restrictions after the war, 572. — Many currencies are key currencies from standpoint of certain commodities, 574. — III. Alternatives facing nations of the world, 576.

I

Three approaches to the problem of international currency stability have been proposed as a means of restoring an orderly system of making international payments for the postwar period. These are (1) the traditional gold standard, (2) the key currency approach, and (3) the approach represented by the Articles of Agreement for the establishment of an International Monetary Fund, formulated at the United Nations Monetary and Financial Conference at Bretton Woods, New Hampshire, in July, 1944

The gold standard approach is simply an appeal for a speedy return on the part of all countries to the traditional gold standard.[1] According to this view no special international organization or mechanism is necessary for the maintenance of stable exchange rates. It is pointed out that there is now more gold and dollar exchange in the hands of countries outside of the United States than ever before, and there is therefore no lack of international monetary reserves.[2] The key to international stability is for each country to put its internal economic affairs in order by balancing its budget and adopting a non-inflationary fiscal and monetary policy. In this way, it is said, a balanced internal position and stable exchange rates for all countries may be maintained.

1. See, for example, The Guaranty Survey, No. 5, August 29, 1944, p 10, ". . . the quickest and most effective way to bring about exchange stability in the post-war period would be for the principal commercial nations to replace their currencies on the gold standard at the earliest possible moment."

2. In an article in the National City Bank Bulletin for August, 1944, it is estimated that foreign gold and short-term dollar resources amounted to $20.6 billion as of June, 1944. In the Federal Reserve Bulletin for November, 1944, it is estimated that foreign gold reserves and official dollar balances at he end of September, 1944, amounted to about $17 billion.

The gold standard approach is, in the first place, impractical as an international monetary policy, because no major country outside of the United States would seriously consider adopting the old gold standard. Whatever we in this country may think, much of the rest of the world is convinced that rigid adherence to the gold standard at fixed gold parities interferes with the maintenance of a high level of real income and employment.

The gold standard approach is, in the second place, open to serious economic objections. It assumes that internal economic stability and external stability are one and the same, and that the only way to achieve internal stability is to maintain a balanced budget. There is, first of all, no a priori reason for the assumption that a balanced internal economy implies balance in a country's international accounts. Likewise, it does not follow that either external or internal stability is incompatible with an unbalanced budget, although it is recognized that at times an unbalanced budget may be detrimental to both. In the event of an excess of payments abroad over receipts it may be possible for a country to reverse the adverse balance by reducing incomes to a point where current receipts from international transactions just balance current payments.[3] But a country which is forced to undergo severe deflation and unemployment in order to balance its international accounts is not maintaining a balanced internal position, unless one means by balanced internal position merely the absence of inflation.

The key currency approach, on the other hand, envisages a need for a limited amount of international coöperation in monetary affairs.[4] There are a few currencies which are of major importance

3. If both the income demand for imports in a country and the price demand for its exports are quite inelastic, it may be impossible to achieve a balance at any level of income.

4. Perhaps the leading protagonist of the key currency approach is Prof. John H. Williams, whose views are stated in the following publications: 'Currency Stabilization: The Keynes and White Plans," Foreign Affairs, July, 1943; Post-War Monetary Plans, Alfred Knopf, New York, 1944, and "International Monetary Plans: After Bretton Woods," Foreign Affairs, October, 1944. Mr. Leon Fraser, President of the First National Bank of New. York and former President of the Bank for International Settlements, has also advocated the key currency approach; see the New York Herald Tribune, November 21, 1943 , Section VIII, p. 12. Mr. John H. Riddle, economic adviser to the Bankers Trust Company of New York, also favors the key currency approach in his British-American Plans for International Stabilization, National Bureau of Economic Research, Occasional Paper

in world trade. These currencies — the dollar and the pound — are "key currencies" in the sense that a large portion of the world's trade is carried on in terms of them and in addition a number of other currencies tend to be tied to them or move closely in relation to them. For this reason the first and most important step toward the reëstablishment of order in the system of international exchanges is said to be the stabilization of the values of the key currencies. Such a stabilization agreement would presumably include an agreement on exchange practices, although proponents of the key currency approach are rather vague on this point, the greatest emphasis being placed on stabilization itself. It is also suggested that stabilization of the dollar-sterling rate will require the provision of dollar funds either in the form of credits or of a grant-in-aid to Great Britain.

According to the key currency approach, currencies other than the dollar and the pound would gradually be stabilized in relation to the key currencies as their internal economies are stabilized and their trade relationships are reëstablished. But, so far as the immediate postwar period is concerned, it is suggested that the non-key currencies be permitted to fluctuate relative to the key currencies. According to the proponents of the key currency approach it would be a waste of funds to attempt a premature stabilization of weak currencies. Any extension of credits made by the United States should be made directly on a bilateral basis, not through an international organization. Only through direct negotiation will it be possible for the United States to set up the appropriate conditions for the use of such credits and their repayment.

The third approach to the problem of international exchange is that represented by the Articles of Agreement on the Establishment of an International Monetary Fund reached at the United Nations Monetary and Financial Conference held at Bretton Woods.[5] The fundamental assumption of this approach is that international monetary stability can be achieved only through the adoption of a common international monetary policy and the estab-

No. 16, December, 1943, New York. Mr. Winthrop W. Aldrich, Chairman of the Board of the Chase National Bank, has expressed sympathy with the key currency approach in his recent address on November 13, 1944, before the International Business Conference at Rye, New York.

5. See Articles of Agreement for the International Monetary Fund and the Bank for Reconstruction and Development, U. S. Treasury Department, Washington, D. C., 1944.

lishment of a permanent international institution for the implementation of that policy. Emphasis is given to the removal of harmful exchange restrictions and discriminatory currency practices by all countries. Provision is also made for the establishment of an appropriate system of exchange rates and for the maintenance of these rates with the aid of a world fund consisting of gold and currencies. Exchange rates would be stabilized, except where the existence of a fundamental disequilibrium makes a change in the established rates clearly desirable.

The International Monetary Fund seeks to avoid the rigidities of the gold standard while at the same time providing the benefits of free exchange dealings at approximately stable exchange rates. The resources contributed by each of the countries becoming members of the International Monetary Fund would be used strictly for stabilization purposes, that is, for helping countries to meet temporary drains, thus giving them time to make fundamental adjustments which may be necessary without having to resort to harmful or restrictive exchange practices. The Bretton Woods approach does not assume that all countries will be able to remove exchange controls immediately after the war, nor is there any intention of supporting exchange rates which, because of internal economic conditions or for other reasons, would not, in the judgment of the Fund, be tenable. Provision is made for the gradual relaxation of exchange controls during the transitional period. Moreover, the Fund will not begin exchange operations in the currency of any country until there is a reasonable chance of that country's maintaining a balanced international position.

The gold standard approach involves no positive program and cannot be seriously considered as a solution to our postwar international monetary problems. Only the key currency proposal remains as an alternative to that represented by the Bretton Woods Agreements. The latter has been adequately dealt with elsewhere and no further mention will be made of the International Monetary Fund proposal, except by way of comparison with the key currency proposal.[6] It is the purpose of this article to analyze the key

6. See E. M. Bernstein, "A Practical International Monetary Policy," *American Economic Review,* December, 1944; Eleanor Lansing Dulles, "Bretton Woods Monetary Conference," *Foreign Policy Reports,* September 1, 1944; E. A. Goldenweiser and Alice Bourneuf, "Bretton Woods Agreements," *Federal Reserve Bulletin,* September, 1944; and August Maffry, "Bretton Woods and Foreign Trade," *Foreign Commerce Weekly,* October 7, 1944.

currency proposal with a view to determining the extent to which it provides a solution for our postwar international monetary problems.

II

It is difficult to present a definitive and unambiguous statement of the key currency approach, because its protagonists have never published a comprehensive statement of exactly what they have in mind. To begin with, there has been some doubt as to what a key currency is, or what the term implies. Professor Williams, who may be regarded as the originator of the key currency approach, wrote in his earlier articles on the International Monetary Fund in terms of the currencies of key countries or leading countries.[7] In a recent article on Bretton Woods he defines key currencies as "those which are used as international means of payment."[8] One cannot be sure whether the currencies are of key significance because of the importance of the country in world trade, or because the currency is used as a means of making international payments. There is also the suggestion that the key currencies provide a convenient starting place for currency stabilization, since the remainder of the world's currencies will tend to become stabilized with reference to one of the key currencies.[9]

Although the chief reason given for stabilizing the key currencies is that the dollar and the pound are the currencies most generally used in making international payments, no explanation is given as to why stabilizing the rate between the two international currencies is more important than stabilizing the rate between the key currencies and the local currencies of the other countries which employ them. There is, of course, an obvious advantage to be gained from a stabilization of the dollar-pound rate, so far as trade between the United States and Great Britain is concerned; but total trade between the United States and Great Britain normally accounts for less than three per cent of the world's trade.

7. Williams, "Currency Stabilization. Keynes and White Plans," *Foreign Affairs*, July, 1943, p. 12.

8. See Williams, "International Monetary Plans: After Bretton Woods," *Foreign Affairs*, October, 1944. See also Mr. Winthrop W. Aldrich's address before the International Business Conference at Rye, New York, on November 13, 1944, in which he defines key currencies as "those in which international trade is commonly conducted and, at the present time, consist of the British pound sterling and the American dollar." Mr. Aldrich calls his proposal the "key nation" approach.

9. Williams, op. cit., p. 55.

To the extent that the dollar and the pound are used by countries in their trade with countries other than the United States and Great Britain, the most important relationship is the rate between the non-key currency and the key currency in terms of which trade is carried on. This is not to overlook, of course, the importance of the relationship between the key currencies themselves for multilateral trade.

The objective of international monetary policy for Professor Williams appears to be the establishment of an international monetary standard consisting of the key currencies, the dollar and the pound, which would be linked together by means of a stabilization agreement. He criticizes the international approach as represented by the International Monetary Fund because in his judgment it does not fully recognize the importance of the key currencies as the principal media for making international payments.

In advocating the key currency principle, Professor Williams belittles the objective of the international approach of making all currencies generally convertible when only the key currencies are actually used in making international payments.[1] But the basic achievement of the Bretton Woods approach is that it makes all currencies acceptable in making international payments. Only in this way can we break down the currency barriers to trade across national boundaries. To the extent that the key currencies alone have been valid in making international payments, Professor Williams wants to perpetuate this system. It may be noted in this connection that he frequently criticizes the International Monetary Fund for not solving the scarce currency problem. His own system not only does not solve the problem of scarce currencies

1. "I cannot escape the conclusion that in the beginning the experts, even those advocating the Clearing Union, failed to see the nature of the problem and were proceeding on the assumption that in setting up an 'international' system, as distinct in their view from a 'key currencies' system, there would somehow result a general inter-convertibility between each currency and every other." Williams, op. cit., p. 44.

"Apart from gold, the attempt to set up a new mechanism must proceed on the assumption that all currencies are multilaterally convertible, each one serving as both demand for and supply of exchange, which is manifestly false, or must provide assurance that the currencies that are actually used as means of international payment will be made available to meet a world demand which arises not merely out of the trade of all the other countries with the key countries but out of the settlement of the trade of all the other countries with each other." Williams, op. cit., pp. 43–44.

but makes no attempt to solve it.[2] This is because he is interested only in establishing a standard for making international payments, not, as is the case with the Fund, in establishing a system of orderly exchange practices which will promote a balanced growth of international trade and investment.

A program for international monetary stabilization must be much more than the establishment of a standard for making international payments. Gold and the dollar can continue to serve as a convenient standard even though the exchange rates of all other countries fluctuate with respect to one another and to gold and the dollar. What is of fundamental importance to the commercial operations of trading countries is that the values of their currencies remain stable in relation to one another.

What has been made clear regarding the key currency approach by all of its supporters may be summarized as follows:

(*a*) The key currency program involves bilateral stabilization agreements between countries whose currencies are of key significance for international trade. For the time being, at least, the key currencies are limited to the dollar and the pound sterling.

(*b*) The values of the currencies of other countries should be permitted to fluctuate, at least until these countries have attained a substantial amount of internal and external stability, after which it is expected that non-key currency rates will be stabilized in relation to the values of the key currencies.

(*c*) Substantial credits or grants-in-aid should be made available to Great Britain for the stabilization of the pound as the initial step in restoring currency stability.[3]

The proposals outlined above are scarcely sufficient to provide us with an international monetary policy. Presumably, the

2. For a discussion of the scarce currency problem see E. M. Bernstein's "Scarce Currencies and the International Monetary Fund," Journal of Political Economy, March, 1945, pp. 1-14.

3. Mr. Fraser in his address before the New York Herald-Tribune Forum on November 21, 1943, suggested a loan of $5,000,000,000 to Great Britain. Mr. Aldrich in his address before the International Business Conference at Rye, New York, on November 13, 1944, suggested that a grant-in-aid of $3,000,000,000 be made to Great Britain. (See The Commercial and Financial Chronicle, New York City, November 16, 1944, for a report of Mr. Aldrich's address.) Professor Williams, in his latest article on Bretton Woods, suggests the continuation of Lend-Lease during the transition period. (See "The Bretton Woods Agreements," *Proceedings of the Academy of Political Science*, XXI (3), May, 1945, p. 48.)

bilateral stabilization agreements would include provisions dealing with exchange practices, but we are not told just what would be included. For example, there is a vast difference between an agreement in which Britain would undertake to permit British citizens to purchase dollars freely in making payments arising out of current transactions with the United States, on the one hand, and making sterling balances of all categories freely convertible into United States dollars, on the other. It is likewise not clear whether those countries whose currencies would gradually be linked to the dollar and the pound after the reconstruction period would maintain stability by means of exchange controls, or whether their currencies would be freely convertible into the dollar or the pound.

By emphasizing the stabilization of exchange rates between the principal currencies the key currency approach overlooks what will almost surely be the most significant post-war currency problem, namely, the universal retention of exchange restrictions and discriminatory currency arrangements, which have played such a large part in strangling trade since the breakdown of the gold standard in the 1930's. Formally, at least, most currencies may very well be stabilized with reference to sterling, the dollar, or gold, after the war, but in much the same way as the German mark was stabilized during the 1930's. But such stability has little meaning when trade is carried on in terms of special currencies with a variety of rates, bilateral deals, and clearing arrangements, and when the purchase and sale of foreign exchange is rigidly controlled under government monopoly. Indeed, free markets with freely fluctuating rates would be far less harmful to world trade than exchange stability which is attained through rigid exchange regulations and government-controlled exchange dealings.

Professor Williams and other advocates of the key currency approach stress the desirability of flexibility in the rates for the weaker currencies in the transition period, in order that these currencies may find their appropriate level.[4] The desirability of a reasonable amount of flexibility is readily admitted and is indeed provided for in the International Monetary Fund. But recent experience indicates that if you permit countries to fix their own rates, you will not get the desired flexibility, nor will there be an effort to find an appropriate level at which currencies can be sta-

4. See Williams, "Currency Stabilization: **Keynes and White Plans**," *Foreign Affairs*, July, 1943, pp. 655–658.

bilized without the aid of exchange controls. By letting countries establish their rates unilaterally there is little likelihood of getting an appropriate system of exchange rates which has a chance of being maintained without the aid of restrictive actions. Without adequate machinery for international coöperation and consultation for altering rates there is little chance of bringing about orderly changes in rates where such changes are clearly needed.

Since the proponents of the key currency approach are not explicit regarding the nature of the proposed stabilization agreement between the United States and Great Britain, it is not clear what the function of the dollar credits provided for in the agreement would be. Amounts varying from three billion to five billion dollars have been suggested as appropriate for the stabilization of the pound. Such amounts are considerably larger than would be required for normal stabilization operations. Large and sustained adverse balances should be corrected by means of a change in exchange rates, a revision of commercial policy, or a fundamental adjustment in the structure of domestic industry.

It may be assumed, therefore, that the large credits which the proponents of the key currency approach have in mind are for the purpose of supplying a portion of Britain's capital needs in the postwar period. It is not the purpose of this paper to discuss Britain's capital needs after the war. In fact, such a discussion would be premature until we know more about the course of the war, the future of lend-lease shipments, the nature of Britain's settlement with Sterling Area countries which have accumulated large sterling balances, and how soon Britain will be able to resume normal exports. Several things should be kept in mind in considering Britain's postwar needs, however. In the first place, Britain cannot solve her long-run problem of obtaining sufficient foreign exchange income to pay for her import requirements simply by obtaining a loan, or even a grant-in-aid, from the United States. This problem can only be solved by expanding her exports, although short-term credits might be necessary for the purchase of raw materials and machinery for the expansion of her export industries. Secondly, Britain is likely to be reluctant to incur a large dollar obligation, since she is anxious to avoid further deterioration in her balance-of-payments position. Britain would undoubtedly be glad to accept a grant-in-aid, but too much in the way of trade and exchange concessions which would affect her

trade balance cannot be expected as a *quid pro quo*. Finally, Britain will probably not be able to make all categories of sterling balances, including abnormal war balances held abroad, fully convertible into dollars for some time to come. Britain certainly would not be willing to borrow dollars to liquidate her large sterling indebtedness, which bears a very low rate of interest and which she is confident she can handle in the course of time through an expansion of her exports.[5]

Britain's problem can, in the long run, best be solved by an expansion of world trade and its stabilization at a high level. A high level of world trade can only be achieved through a general lowering of trade barriers, a substantial portion of which have in the past taken the form of exchange barriers. A removal of exchange restrictions and the elimination of discriminatory exchange practices can only be accomplished by means of an international convention to which all, or nearly all, countries would be willing to adhere. It is for this reason that the British representatives at the Bretton Woods Conference have agreed to a program for the elimination of exchange restrictions by all countries, rather than taking the view that the solution to Britain's problems lies in the method of bilateral deals, exchange restrictions, and discriminatory exchange practices.

The key currency program has been offered as a substitute for a full-scale international agreement on exchange rates and exchange practices, on the ground that many countries will not be able to stabilize their currencies without the aid of exchange restrictions after the war. It is readily admitted that most countries that have suffered from enemy occupation or action, including Great Britain herself, will not be able to remove exchange restrictions immediately after the war. The chief criticism to be made of the key currency approach is not to be found in the fact that it permits the maintenance of exchange restrictions by most countries in the immediate postwar period, but that it sets up a system which must inevitably lead to a strengthening and expansion of currency blocs and bilateral arrangements which channelize trade. If we are ever to realize a system of multilateral trade on a world basis, we must

5. In his address before the International Business Conference at Rye, New York, Mr. Aldrich admitted that the $3,000,000,000 grant-in-aid would be insufficient for liquidating the abnormal sterling balances and suggested that Britain fund these accounts into long-term obligations.

plan now for the gradual elimination of exchange restrictions through international agreements which commit countries to work toward a removal of such restrictions and the breaking up of bilateralism and currency blocs. If we wait until postwar exchange policies and practices have been fully developed and vested interests built up in government controls of all types, we may never be able to free the world's trade of currency barriers.

Latin American countries have built up large monetary reserves in the form of gold and dollars, and many of them are now in a position to relax the restrictions, such as multiple currency arrangements and discriminatory exchange practices, which prevail in their exchange markets. Yet, if these countries are not brought into an international agreement in which all members agree to eliminate these restrictions, they are likely to retain them in the postwar period. Moreover, these countries are likely to fall prey to the offer of bilateral agreements with industrial countries as a means of assuring a steady market for their raw material exports.

If agreements on exchange rates and exchange practices are confined to the key countries, only a small percentage of the world's trade will be affected. Total trade between the United States and Great Britain in 1938 amounted to less than 2.8 per cent of the world's trade. Trade with Great Britain amounted to about seventeen per cent of our total exports and six per cent of our imports. Although exports to Great Britain were slightly larger than our exports to Canada in 1938, our total trade with Canada was more important than was our total trade with Great Britain. France has also been suggested as a key country, but in 1938 our exports to France accounted for only 4.3 per cent of our total exports and 2.8 per cent of our total imports. United States trade is not concentrated with a few countries but tends to be rather widely distributed. Moreover, our merchandise trade is not even approximately balanced with any of the leading trading countries. Hence it would be difficult to pick any countries with which we might seek an agreement from the standpoint of obtaining agreements covering the bulk of our trade. Nor would this problem be solved by agreements which included all of the countries whose currencies were tied to the key currencies. Canada, for example, maintains close financial relationships with both the United States and Great Britain, although she is not a sterling area country. Canada would need to make special arrangements with both Great Britain and the United States, as well as with other key countries,

say, for example, France. Such agreements could not go very far in the direction of eliminating exchange controls, since Canada would be dealing with three different exchange control systems. Other countries would be in a position similar to that of Canada.

Mr. Louis Rasminsky has pointed out in a recent article that many currencies are key currencies from the standpoint of certain commodities.[6] Thus the Canadian dollar and the Argentine peso are key currencies so far as American wheat producers are concerned; the Egyptian pound and the Indian rupee are the key currencies so far as the American cotton growers are concerned. To every American producer of export commodities there are certain countries whose exchange rate and system of exchange control are important from the standpoint of the market for his product. Likewise to consumers of imported products, the currencies of the countries producing these products are key currencies. In fact, it may be said that as competitors or consumers of the products of other countries nearly every currency in the world is a key currency to nearly every other country in the world.

What would be the position of the United States in a world in which currencies were organized into, say, dollar, sterling and franc blocs in which there was maintained inter-convertibility among the currencies within each bloc, with the key currencies in the different blocs linked together by means of stabilization agreements? We might expand our stabilization agreements with the South American countries and aid them in maintaining convertibility with the dollar, so far as inter-American trade is concerned. The United States would not be likely, however, to undertake to convert the favorable balances of dollar area countries with countries in other currency blocs into dollars, since we would be interested only in supplying dollar credits in amounts sufficient to meet temporary adverse balances arising out of trade between the United States

6. "International Credit and Currency Plans," Foreign Affairs, July, 1944. Professor Williams charges that Mr. Rasminsky misses the point that the "key currencies are those which are used as international means of payment" when the latter states that in the wheat trade the Canadian dollar is a key currency (op. cit., p. 49). The fact is Professor Williams did not define exactly what he meant by a key currency until after Mr. Rasminsky's article had been published. Mr. Rasminsky did not miss the point; he simply refused to accept the point that currencies are of key significance only to the extent that they are used as international means of payment. He was emphasizing the fact that the significant thing about a foreign currency is not that it may or may not be used as an international means of payment, but that its value determines the prices of foreign commodities in terms of your own currency, and the prices of your own commodities in terms of the foreign currency.

and the countries of the dollar area. Likewise, Great Britain would probably be unwilling to finance with dollars the adverse balances of the sterling area countries with dollar area countries other than the United States or with franc area countries. Nor would the United States be willing to supply dollars to Britain to enable sterling area countries to finance their trade with countries other than the United States.

It is conceivable, of course, that through a series of key currency agreements providing for the financing of adverse balances between any two countries in different currency blocs a system of multilateral clearing could be approximated. There are certain difficulties which militate against the realization of such a system, however. First of all, without an international organization it would be difficult to achieve the adoption of common rules and standards with respect to exchange practices. Second, it would be difficult to fit all countries into the orbit of one bloc or another and to get them to abide by its rules. If several important countries found it to their advantage to remain outside of any currency bloc it would tend to weaken the entire structure and jeopardize the system of multilateral trade. For example, Canada might not find it to her advantage to align herself with any currency bloc. If she became associated with the sterling area she would probably be required to turn over her surplus dollars and francs to London in exchange for sterling credits and to look to London in turn for her dollar and franc needs. If, on the other hand, she joined the dollar bloc, a change in the dollar-sterling rate might seriously affect her trade with sterling area countries. To such countries, therefore, a world organization would be far more attractive than membership in any bloc. As a member of a particular bloc each country must subordinate its particular economic advantage and adopt its monetary and trade policies with reference to the currency bloc of which it is a member. Under a global system each country is able to organize its external economic affairs with reference to the entire world.

In summary, the key currency approach is likely to lead to the establishment and perpetuation of closed trading systems with trade between these systems conducted on a bilateral rather than a multilateral basis. Multilateral trade would be further jeopardized by the fact that many important countries would lie outside of any currency bloc. Such countries would be completely outside of any agreement with respect to rates and exchange practices,

and might find it necessary to enter into bilateral agreements among themselves and with individual countries which were members of organized blocs. At best, a system of currency blocs linked together by means of agreements between the key countries might approximate conditions for universal multilateral clearing. Such a structure would tend to be complicated and unstable, and would be far more difficult to erect and maintain than an international system in which all currencies were linked together through gold as a common denominator and exchange relationships regulated by common rules arrived at through international conventions.

III

As World War II draws to a close the nations of the world must make a choice between two alternatives. Either each nation will actively manage its foreign trade and its balance of payments, trade and currency relationships being worked out through bilateral deals and the formation of trading blocs; or nations must develop through international coöperation a common monetary and trade policy which will make possible the maximum volume of multilateral trade. There are no half-way measures. We cannot expect the world to adopt the gold standard simply because we want it; nor can we bribe other nations to adopt it. A bilateral agreement with Great Britain cannot provide the nations of the world with a common international monetary policy. If Britain or, for that matter, any other important country, adopts a policy of freedom of exchange transactions and non-interference with private international trade, that country will do so because it believes that its foreign trade problem can best be worked out in a world in which trade is generally free, not because we offer a prize in the form of large credits or a grant-in-aid.

Nations like Great Britain will never again permit their internal economic policies to be dictated by external economic forces which they are in no position to control. If we want a world in which international trade is conducted on the basis of free enterprise and multilateral clearing, we must assure nations that they will be able to live in such a world without endangering their internal economic welfare. These assurances can only be given through international coöperation of the type represented by the International Monetary Fund.

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THE CLASSICAL INDICTMENT
OF INDIRECT TAXATION[1]

SUMMARY

The "excess burden" doctrine, 577. — I. Marshall's analysis, 578 —. Mrs. Hicks' reformulation, 579. — J. R. Hicks on "compensating variations in income," 579. — Miss Joseph's analysis, 579. — II. Excess burden not peculiar to indirect taxes, 582. — Comparison with income taxes, 586. — Progression, 587. — Compensation for subjective costs, 590. — III. Other economic effects of taxes, 591. — IV. Commodity and income taxes in the light of "ideal" requirements, 594. — V. Conclusions, 596.

Commodity taxes, or excises, make a poor showing when analyzed in terms of the economic criteria for desirable revenue measures. "Price-distorting," "regressive," and "deflationary" are some of the charges frequently brought against them. Of these charges, the one which is supported by the most elaborate theoretical framework is the claim of price distortion. By raising selling prices, it is argued, commodity taxes interfere with the optimum allocation of resources among the innumerable objects competing for the consumer's dollar. The individual is induced to shift some of his consumption from taxed to untaxed goods and services. Part of the resultant loss of consumer satisfaction is described as an "excess burden" — a burden which need not have been incurred had the Government resorted to methods of taxation which did not disturb prices.

The literature pertaining to this classical indictment of indirect taxation reveals a serious lack of perspective. *It fails to recognize that whatever merit the "excess burden" doctrine might have as a guide to tax policy is seriously weakened, if not destroyed, by the fact that the doctrine is just as applicable to many direct methods of taxation, such as individual income taxes, as to indirect methods.* Nor has there been any satisfactory formulation of the theoretical conditions which are necessary for particular commodity or income taxes to attain the

status of "ideal" taxes, i.e. taxes which are devoid of price-distorting effects.[2]

The present paper is intended to present a brief discussion of the development of the "excess burden" doctrine, an analysis of its applicability to commodity taxes and to proportional and progressive income taxes, and a statement of the theoretical conditions for minimizing the loss of consumer satisfaction induced by the price-distorting effects of these taxes.

I

The theoretical foundation for the prevailing view which contrasts indirect taxes unfavorably with direct taxes, on grounds other than of fiscal policy and distributional considerations, was developed by Alfred Marshall. By means of his consumers' surplus substructure and of the demand and supply curves which, in his hands, were such powerful analytical tools, Marshall demonstrated that a commodity tax reduces consumers' surplus by more than the gross tax yield. "For on that part of the consumption of the commodity which is maintained, the consumer loses what the State receives; and on that part of the consumption which is destroyed by the rise in price, the consumers' surplus is destroyed; and of course there is no payment for it to the producer or to the State."[3] The net loss of consumers' surplus — frequently referred to as "the excess burden of indirect taxation" — is smallest, according to Marshall, "for those commodities the demand for which is most inelastic, that is, for necessaries."[4]

2. Commodity taxes which are levied for sumptuary purposes and, therefore, are expressly desired for their price-distorting effects are excluded from the present article.

3. Alfred Marshall, Principles of Economics, Eighth Edition (London, 1938), p. 467. That part of consumers' surplus which is destroyed by the tax-induced price rise is a net social loss only in the sense that it need not have been destroyed if the money had been raised in another way. It would be fallacious, of course, to value the money taken away from consumers in "utility" units, while valuing the same money in the hands of the government in monetary units. If the same "utility" concept were applied in both cases, the whole revenue-expenditure process might be found to create a net social gain or a net social loss. It should be stressed that the present article is exclusively concerned with the economic effects of alternative methods of raising a given amount of revenue. No account is taken of the expenditure of this revenue by the government.

4. Ibid. In order to emphasize that this theoretical proposition, by itself, was inadequate as a basis for tax policy recommendations, Marshall added: "though of course the consumption of luxuries and in a less degree of comforts indicates ability to bear taxation."

In order to dissociate the fundamental tax principles thus established from Marshall's assumptions of cardinal (or quantitative) utility and of constant marginal utility of money, the principles have been reformulated in recent years in somewhat different terms. Mrs. Hicks attempted to place the "excess burden" theorem on a more acceptable foundation by refraining from the use of geometrical tools and talking simply of the inferior combination of goods with which the consumer must be content when he shifts his demand from taxed to untaxed commodities. The new combination must represent an inferior choice, since it was within the consumer's power to purchase this new combination in the period prior to the enactment of the tax. "The consumer thus suffers a loss over and above the actual money income given up when the tax falls on a commodity of elastic demand."[5] To Marshall's analysis Mrs. Hicks adds this conclusion: "Where a commodity is in absolutely inelastic demand, a tax upon it is equivalent to an income tax of the same amount."[6]

J. R. Hicks, writing at about the same time, demonstrated that "a tax on commodities lays a greater burden on consumers than an income tax" by defining consumers' surplus as the "*compensating variation* in income, whose loss would just offset the fall in price, and leave the consumer no better off than before."[7] This compensating variation, he held, is at a minimum when a reduction in tax does not result in any increased consumption of the taxed commodity; ordinarily, however, consumption will be increased upon a reduction in tax, so that the compensating variation can be expected to be greater than the minimum.

By reformulating Marshall's original proposition in terms of the theoretical schema provided by the indifference curve approach, M. F. W. Joseph attempted to develop a more exact statement of the principle and a more general condition for minimizing the

5. Ursula K. Hicks, The Finance of British Government, 1920–1936 (London, 1938), p. 254.

6. Ibid., p. 253. In a footnote Mrs. Hicks states that "a tax of this type [i.e. a tax on a commodity in absolutely inelastic demand] is akin to the Ricardian tax on rent." This statement, taken in conjunction with the quotation in the text of this article, lends itself to the interpretation that she views an income tax as a tax which is "akin to" the Ricardian tax on rent. That such a view is untenable is demonstrated in Section II, below.

7. Value and Capital (Oxford, 1939), pp. 40–41. Italics in original.

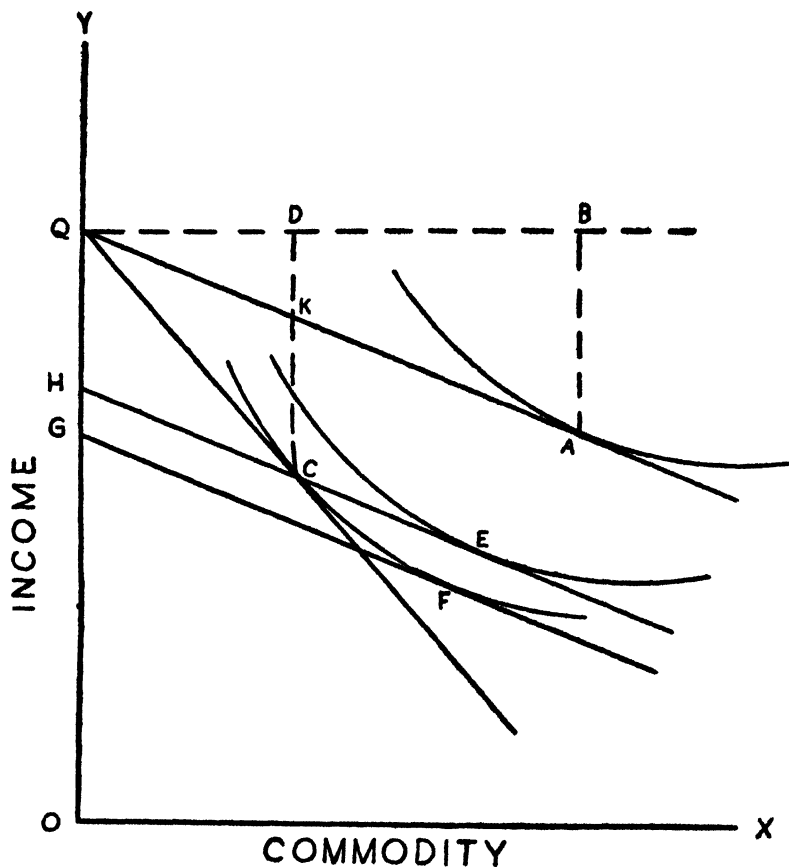"excess loss" imposed by commodity taxation.[8] The diagram which she used is reproduced in Figure I.[9]

FIGURE I

8. "The Excess Burden of Indirect Taxation," The Review of Economic Studies, Vol. VI, No. 3, June, 1939, pp. 226–231.

9. A similar diagram appears in "Welfare Economics and Rationing," by. M. W. Reder, this JOURNAL, Vol. LVII, No. 1, November, 1942, p. 154, and in The Theory of Competitive Price, by George J. Stigler (New York, 1942), p. 81. Reder uses the diagram to "re-prove" the theorem "that an income tax is superior to any tax levied on commodities" (p. 153). Stigler's statement of the proposition is: "the individual taxpayer will be on a higher indifference curve if a certain sum of money is taken from him by a personal income tax than if it is raised by means of a commodity (excise) tax" (p. 81).

Money is measured along the Y axis and the amount of the commodity which is taxed along the X axis. Given an amount of income, OQ, and the pre-tax selling price, represented by the slope of the line QA, the consumer will buy the amount of the commodity corresponding to the point of tangency of the price line with the indifference curve representing the maximum satisfaction compatible with the given income and price situation. The point of tangency is A and the amount bought is QB. Imposition of an ad valorem commodity tax is assumed to raise the price from QA to QC (the steeper slope of the latter reflecting the fact that each dollar of income now buys fewer units of the taxed commodity), thus forcing the consumer to an inferior indifference curve. At the new price he will buy QD, paying CD, of which CK represents tax revenue.

To compare this situation with that produced by the imposition of an income tax yielding the same revenue, Miss Joseph drew the line HCE parallel to QA. The new line, whose slope reflects the original price of the commodity, reduces income by QH (= KC, the yield of the indirect tax) and is tangent to an indifference curve at E. Given the upward concavity of the indifference curves, this point of maximum satisfaction must lie on a superior indifference curve than C. Thus it is shown that there is a greater loss of consumer satisfaction in indirect taxation than in direct taxation.

To measure the inefficiency of the indirect method, another line, GF, is drawn parallel to QA and tangent to the same indifference curve as QC. The indirect tax yielding CK is said to be equivalent, in terms of its burden, to an income tax yielding QG. Therefore, GH is the additional yield which might have been obtained by substituting an income tax for the commodity tax, "without imposing any extra burden on the consumer."[1]

Pursuing this method of analysis, Miss Joseph attempted to refine Marshall's original formulation by demonstrating that "the general condition for the minimization of the excess burden is that elasticity of substitution (which is reflected in the curvature of the indifference curve), not elasticity of demand, shall be zero."[2] Referring to the diagram, zero elasticity of substitution requires an L-shaped indifference curve, with a right-angle at C. Then HC will be tangent to the same indifference curve as QC and there will

1. M. F. W. Joseph, op. cit., p. 227.
2. Ibid., p. 228.

be no difference in burden between an income tax and a commodity tax, both yielding CK. For zero elasticity of substitution, price elasticity must bear a special relation to income elasticity, the relation depending on the proportion of income spent on the taxed commodity. Only in the case where this proportion is very small, so that income elasticity can be regarded as zero (which is the case assumed by Marshall), will price elasticity also be zero. Miss Joseph's conclusion is that, "except in the extreme case of zero elasticity of substitution, all indirect taxation is more burdensome in proportion to its yield than direct taxation."[3]

II

From the preceding review it is evident that the imposition of an "excess burden" is generally considered to be peculiar to the indirect method of taxation. This proposition has often been cited as a significant reason for favoring the individual income tax over commodity or excise taxes.[4] It is difficult to understand why this view is so widely held and so deeply imbedded in economic dogma. Certainly, it cannot be argued that the tax-induced price distortion which inspires the shift in the pattern of consumer purchases and thereby generates the so-called "excess burden" is in any way peculiar to indirect taxes. That certain direct taxes have wholly analogous price-distorting effects is easily demonstrated.[5]

The price elasticity of the supply of labor is often analyzed in terms of the demand for leisure. To reserve one's time and effort for oneself, rather than to sell them in the labor market, is of course a legitimate form of consumption. In effect, it permits a man to consume a part of his income by the process of not earning it. The cost of leisure (i.e. the loss of income due to not working) is

3. Ibid., p. 229.
4. In addition to the sources already cited, the reader is referred to an article by Harold Hotelling ("The General Welfare in Relation to Problems of Taxation and of Railway and Utility Rates," Econometrica, Vol. 6, No. 3, July, 1938, pp. 242–269), in which the loss due to indirect taxation is analyzed in the broad terms of welfare economics, and to subsequent articles by Ragnar Frisch and Hotelling (Econometrica, Vol. 7, No. 2, April, 1939). In contrast to most other writers, Professor Hotelling recognizes at one point that "an income tax of the usual kind is a sort of excise tax on effort and on waiting . . . [and] is to some extent objectionable because it affects the choice between effort and leisure, and the choice between immediate and postponed consumption" (Econometrica, April, 1939, pp. 154–155). In this connection, he refers to discussions with A. P. Lerner.
5. Cf. "What is the Best Tax System?", by Frederic Benham, Economica, Vol. IX (New Series), No. 34, May, 1942, pp. 115–126.

determined by the level of wage rates. A raising or lowering of wage rates can be said to represent a raising or lowering of the price of leisure.

It is apparent that the imposition of an individual income tax of the usual type has the same effect on the price of leisure as a reduction in wage rates; leisure is made less expensive. Because of the tax, the potential income a man sacrifices when he enjoys leisure is reduced. The demand for leisure, however, is unlike the demand for most other objects of consumption, in that there is identity between the buyers and sellers. Those who are buying leisure (i.e. sacrificing income by working less) are also selling leisure (i.e. earning income by working more). In such a situation, changes in price cause "income effects" and "substitution effects" which pull in opposite directions, and the net effect on the quantity demanded is indeterminate from the standpoint of a priori analysis.[6]

In the case of a commodity tax, the "income" and "substitution" effects usually, though not necessarily, reinforce each other. That is, the consumer buys less for two reasons: first, because the tax reduces his income; second, because it raises the selling price.[7] In the case of an income tax, on the other hand, there is a conflict between the two effects. The tax-induced reduction in aggregate income will normally be followed by a decreased demand for leisure, since leisure can be considered to be complementary to other objects of consumption. But by *lowering* the cost of leisure (in contrast to commodity taxes, which *raise* commodity prices), the tax, through its "substitution effect," will tend to increase the quantity demanded. The net effect of these opposing incentives will vary with the relative income and price elasticities of the demand for leisure.[8] In the lower income strata, where only a bare subsistence standard of living is possible, one would expect the "income effect" to be dominating, so that an income tax would reduce the demand for leisure and increase the supply of labor.

6. Cf. J. R. Hicks, op. cit., Ch. II.

7. The rare case where the reduction in income results in an increase in the quantity bought is that of "inferior goods," the classical examples being bread and potatoes.

8. The larger the decrease in marginal income relative to the decrease in aggregate income, the more likely it is that more leisure will be demanded. Cf. "Economic Incentives in Wartime," by F. W. Paish, Economica, Vol. VIII (New Series), No. 31, August, 1941, pp. 239–248; also, "On the Elasticity of Demand for Income in Terms of Effort," by Lionel Robbins, Economica, No. 29, June, 1930, pp. 123–129; and The Incidence of Income Taxes, by Duncan Black, London (1939), Ch. XII.

FIGURE II

INCOME

FIGURE III

LEISURE
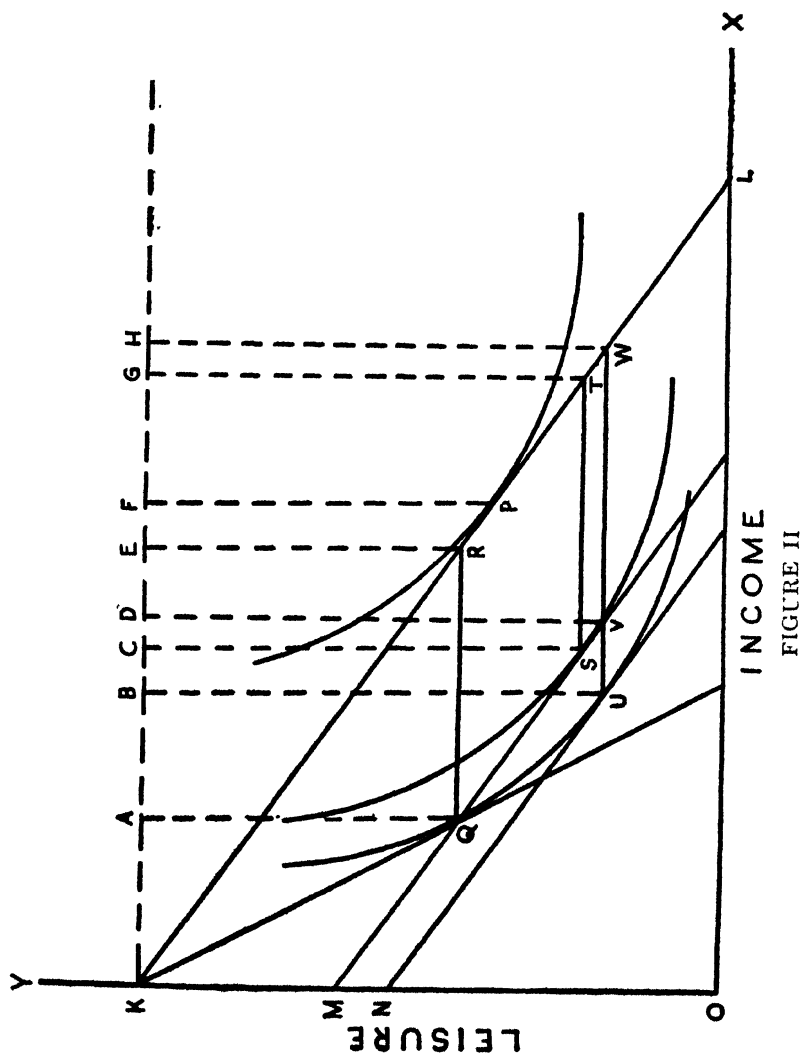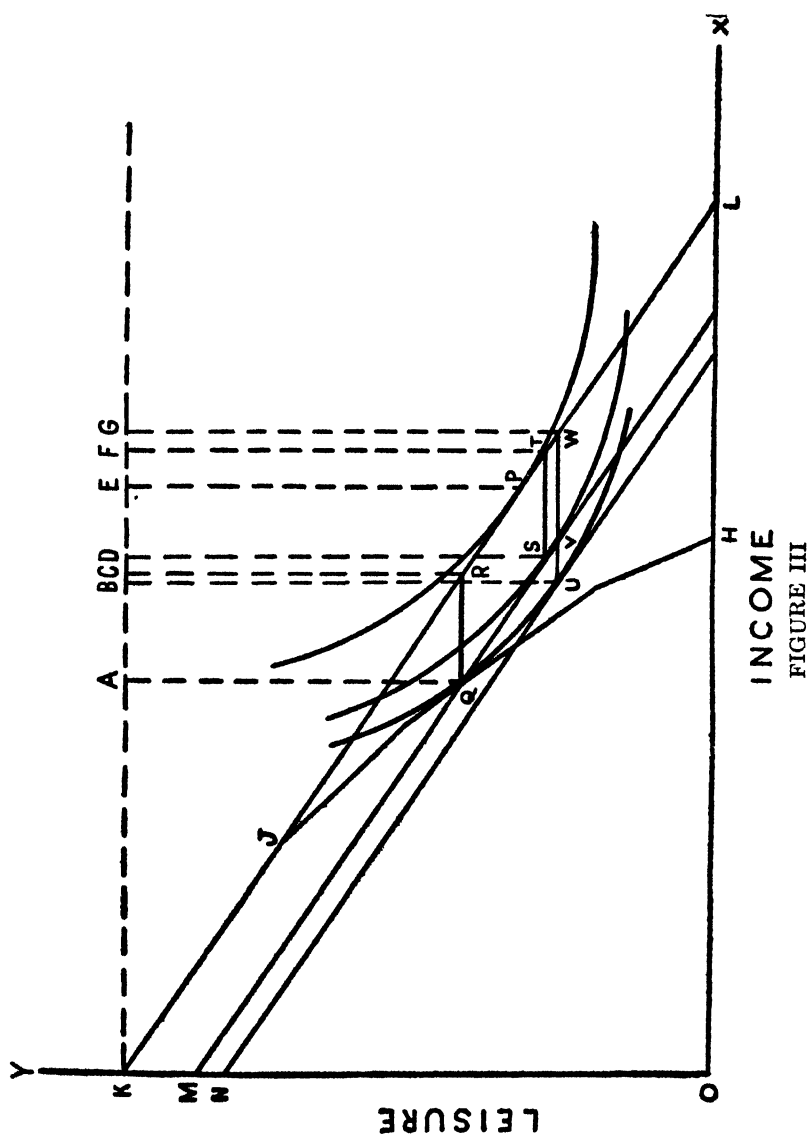
The dissimilarity in the "income" and "substitution" effects of commodity and income taxes should not be permitted to conceal the fundamental parallelism, namely, that the price distortion which characterizes an income tax shifts the pattern of individual behavior and induces a loss of consumer satisfaction wholly analogous to the loss of satisfaction under a commodity tax. This can be demonstrated diagrammatically by referring to Figures II and III, which illustrate the demand for income in terms of leisure, in much the same way as Figure I illustrates the demand for a given commodity in terms of income. The indifference curves in Figures II and III reflect the individual's scale of preferences as between leisure and income. Units of leisure (measured either in number of hours of leisure or in terms of some abstract unit) are measured along the vertical axes and dollars of income along the horizontal axes.[9]

Figure II traces the effects of a proportional income tax. If OK represents the theoretical maximum of leisure which a man might enjoy, and the slope of the line KL the exchange rate (before tax) between units of leisure and dollars of income (i.e. the number of dollars which might be obtained by sacrificing a unit of leisure), then all possible positions of equilibrium open to him are shown by the line KL, and the maximum possible income he might earn by selling all his leisure equals OL. The line KL touches the highest indifference curve at P, which is the point of maximum satisfaction under the given conditions. In this position, the individual sacrifices FP units of leisure, for which he receives KF dollars of income and reserves KO − FP units of leisure for himself.

Imposition of a proportional income tax lowers the price of leisure (or raises the price of income) to the slope of the line KQ, the point Q representing the optimum combination of leisure and income (after income tax) under the new price situation. As the diagram is drawn, the tax is assumed to decrease the quantity of leisure offered for sale from FP to AQ (that is, the tax is assumed to decrease the supply of work), but it has already been indicated that whether the quantity of leisure will be increased or reduced

·   9. The reader will note that income, which is measured vertically in Figure I, is measured horizontally in Figures II and III. This procedure was followed in order to highlight the basic similarity among the three diagrams. In each case, the object taxed is measured along the horizontal axis. Imposition of the tax, therefore, always shifts the price line, or line of exchange, in the same direction.

by an income tax is uncertain from a theoretical standpoint. If the individual's indifference map were of a somewhat different shape, the new equilibrium point might fall below P, indicating a larger amount of leisure offered for sale and a smaller amount retained by the individual.[1] In any event, the significant observation for present purposes is that Q necessarily lies on an indifference curve inferior to P, reflecting a loss of consumer satisfaction (the consumer being the purchaser of leisure). In the new equilibrium position, a total of KE dollars of income (before tax) is earned. The tax on this income equals QR (= AE) and income after tax equals KA.

Following the line of reasoning applied when analyzing the effects of a commodity tax, it is seen that, if the price of leisure had not been distorted by an income tax, the same amount of revenue (ST = QR = AE) could have been obtained by a tax of a fixed dollar amount (e.g. a poll tax) which would have left the individual better off. That is, the line MS, drawn parallel to KL and at a horizontal distance from KL equal to the tax yield, QR, touches an indifference curve at S which is necessarily superior to Q. Under a tax of a flat amount of ST (= CG) dollars, the individual would sell CS units of leisure and earn a total of KG dollars, of which KC would represent income after tax.

A measure of the "excess burden" imposed by the proportional income tax can be obtained by drawing NU also parallel to KL and tangent to the same indifference curve as KQ. A tax of a fixed amount of UW dollars would leave the individual as well off as a proportional income tax yielding QR. The excess of UW over QR (= VW) is shown to be UV, which is the additional revenue which might have been obtained by a levy of the poll-tax variety without imposing any further burden on individuals.

In Figure III it is assumed that a progressive income tax with a personal exemption is imposed. The pre-tax exchange rate between leisure and income is represented by the slope of the line KL, which touches the highest indifference curve at P.

Upon enactment of the progressive income tax, all possible combinations of leisure and income (after tax) open to the individual are shifted from KL to the irregular line KJQH. The latter line has an interesting shape. Because of the personal exemption provision, it coincides with KL as far as the point J. Thereafter, its slope gradually increases. The varying slope of KJQH reflects

1 Cf. D. Black, op. cit., pp. 160–163.

the marginal rates of exchange (after tax) between leisure and income under the progressive income tax. At each point where the slope changes, one income-tax bracket is assumed to end and another to begin.

The post-tax equilibrium point in Figure III is at Q, where KJQH touches the highest indifference curve. The individual now earns KC dollars of income (before tax) and pays a tax of QR (=AC) dollars. It is evident that a tax of a flat amount of ST (=QR) dollars would leave the individual better off than under the progressive tax, since MS, drawn parallel to KL, is tangent to an indifference curve at S which is necessarily higher than Q.[2]

A measure of the "excess burden" which might be attributed to a progressive income tax, as compared with a tax of a fixed dollar amount, can be obtained by drawing NU parallel to KL and tangent at U to the same indifference curve as KJQH. If the individual were assessed a flat amount of UW dollars, he would be just as well off as under a progressive income tax with the rate structure reflected in KJQH. He would sacrifice CU units of leisure for which he would receive KG dollars of income before tax and KB dollars after tax. In contrast to the yield of QR (=VW) under the progressive tax, the flat tax would yield additional revenue of UW−VW=UV.

Figures II and III indicate that, so far as the existence of an "excess" loss of consumer satisfaction is concerned, there is complete parallelism between direct taxes levied on individual incomes and indirect taxes levied on the sale of goods or services. In both cases the consumer suffers a burden which need not have been borne if a tax of a fixed amount of dollars had been imposed.

Moreover, the "excess burden" of an income tax arises in an identical manner in connection with tax effects other than those on the price of leisure. From the standpoint of investors, rather than

2. It is possible to insert in Figure III an additional line reflecting the exchange rate between leisure and income under a proportional income tax yielding the same amount of revenue as the progressive tax shown in the diagram. Contrary to the general belief, it does not necessarily follow that the proportional income tax would leave the consumer on a higher indifference curve. In Figures IV and V, the exchange lines under a proportional income tax are represented in each case by the lines KQT; under a progressive tax the exchange lines in each diagram are KHRS. Each diagram is drawn so that the two taxes will produce equal revenues, since the post-tax equilibrium points always fall on the lines MN, drawn parallel to the lines KL, the pre-tax exchange lines. In Figure IV, the consumer is better off under the proportional income tax, since Q is on a superior indifference curve than R. In the next
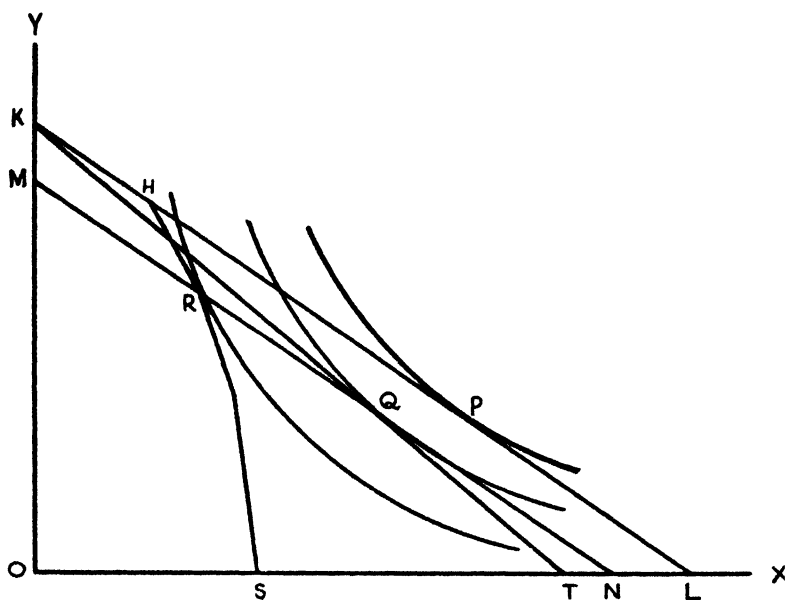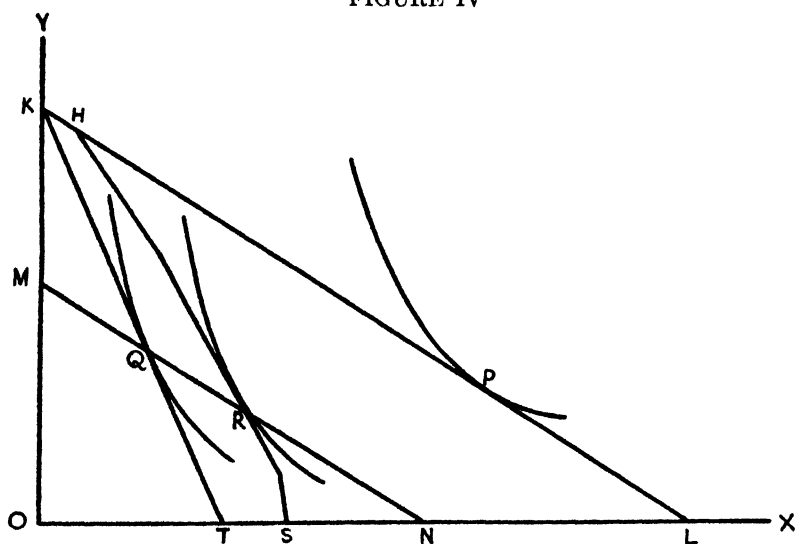
FIGURE IV

FIGURE V

diagram, however, the progressive income tax is less burdensome per dollar of revenue; the point R touches a higher indifference curve than Q. An exposition of the income, price, and substitution elasticities which make the proportional tax more desirable under some conditions and the progressive tax under others is beyond the scope of the present article.

workers, an income tax can be said to disturb the price of liquidity.[3] That is, by taxing the fruits of investment, an income tax reduces the loss of income which results when savings are maintained in liquid form instead of being invested in income-yielding assets. The analogy between this effect and the tax effect on the price of leisure, however, must be somewhat qualified.

A *proportional* income tax with provision for *full loss offsets for all investors* would have no price-distorting or "substitution" effect on risk-taking. Both the potential profit and the potential loss from any new investment would be reduced proportionately.[4] If the price of liquidity is viewed simply as the monetary compensation for risk-taking (i.e. if an investor's reluctance to sacrifice liquidity is solely a function of the relative probabilities of monetary profits and losses from possible investments), an income tax of the type just mentioned (which, it must be admitted, is quite unrealistic) would not disturb the price of liquidity.

On the other hand, it should be recognized that the market probably compensates investors for certain costs which are not necessarily reflected in dollar-and-cent outlays by them. These costs include such things as "inconvenience," "uncertainty," and the psychological satisfaction lost when one gives up "cold cash." Since such costs, when incurred, need not reduce an investors' income for tax purposes, while the compensation which they elicit does add to taxable income, an income tax reduces the cost (i.e. the loss of income) of holding assets in liquid form, regardless of the adequacy of the loss offset provisions. It is with reference to that particular segment of investment income which represents compensation for subjective costs that there is complete parallelism with the effect of an income tax on the price of leisure and the effect of a commodity tax on the price of a given commodity. The "substitution effect" of an income tax on the demand for liquidity

3. The distorting effects of an income tax on the decision to spend or to save are discussed by Abba P. Lerner (The Economics of Control, New York (1944), pp. 235–236). The tax is said to interfere with this decision because of the "double taxation of saving" under most income tax laws. Because such interference occurs only when savings are not held in liquid form (i.e. when savings are invested), it would appear to be more accurate for Lerner to refer to the tax effect on the price of liquidity, rather than to the effect on spending-savings decisions.

4. Cf. "Proportional Income Taxation and Risk-Taking," by Evsey D. Domar and Richard A. Musgrave, this JOURNAL, Vol. LVIII, No. 3, May, 1944, pp. 388–422; also, Lerner, op. cit., pp. 238–240.

induces a shift toward greater liquidity. By applying the line of reasoning followed in the preceding cases, it can be established that the tax necessarily induces an "excess" loss of consumer satisfaction. To the extent that the income tax is progressive, and to the extent that there is not an opportunity for a full loss offset at all times, risk-taking is made more costly in monetary terms and there is an additional reduction in the price of liquidity. Under such circumstances, the tax-induced loss of satisfaction tends to be enlarged.

III

It is apparent, therefore, that the "excess burden" principle has wider applicability in the field of taxation than has been generally assumed. Instead of relating exclusively to indirect taxes, it involves all taxes which have price-distorting effects, regardless of whether the taxes affect the prices of tangible goods, consumer services, leisure or liquidity.[5] Such price disturbances tend to induce deviations from the pre-tax pattern of consumer behavior (which is assumed to be the optimum pattern), leaving consumers less well off than if they had been deprived of the same amount of money by methods of taxation which did not affect prices. The only taxes which fall in the latter class are direct taxes which are fixed in amount and, therefore, are independent of the individual's income, spendings, savings, and property holdings.[6]

To rest the argument at this point, however, would be to overlook some important economic effects which follow in the wake of any tax. It is evident, for example, that a tobacco tax can affect the demand for other things besides tobacco — leisure and liquidity (and all other objects of consumption). With less real income, an individual might decide to work more and devote less potential income to the purchase of leisure, or to invest more and devote less potential income to the purchase of liquidity. Likewise, an income tax can affect the demand for leisure and liquidity, and also

5. In Pigovian terminology we would say that the principle applies to all taxes which have adverse "announcement effects" (A. C. Pigou, A Study of Public Finance, London (1928), Pt. II, Ch.V).

6. In addition to poll taxes, one might include in this "ideal" tax category levies on true windfalls and on most forms of "economic surplus" (defined in the classical sense), and taxes based on abstract measures of ability-to-pay, such as a "faculty" tax. Theoretically, an income tax could be freed of price-distorting effects by defining income in its ultimate sense, i.e. as the sum total of satisfactions obtained from all possible sources. By this definition, income would include the subjective satisfactions derived from leisure and liquidity.

the demand for tobacco. The interconnecting factor in such cases, of course, is that all taxes reduce real income and, therefore, affect the individual's apportionment of his income between alternative uses.[7] With a reduced income, he must balance the relative usefulness of different goods and services and decide on which ones to cut down; he must reconsider previous decisions regarding the quantity of leisure he wants to enjoy; and he must reappraise his needs for liquidity. Such effects are generally characterized as "income effects," since they stem directly from changes in the *quantity* of income which is at the individual's disposal.

There is also a second type of interrelationship between a tobacco tax and the demand for leisure and liquidity and between an income tax and the demand for tobacco. In this case, the interdependence stems from the fact that both types of tax affect the *value* of each unit of income at the individual's disposal. The resultant shifts in the individual's behavior pattern might be called "indirect substitution effects."

To induce a "substitution effect," there must be a distortion of prices, so that the consumer is impelled to substitute one thing for another. A tobacco tax, or any other indirect tax, distorts the price of the object which is taxed. In addition, it can distort the price of leisure (and the price of liquidity), because the tax tends to reduce the real value of a potential increase in income. A man considering whether or not to earn more income by working longer hours will attempt to evaluate the usefulness of the things he will buy with an enlarged income and to balance this against the disutility or inconvenience of more work. To the extent that some of his enlarged income would be spent on a commodity which is taxed, a potential increase in income would be worth that much less because of the tax.[8]

By this roundabout route, a commodity tax can create the

7. If government expenditures were taken into account, there need not be any reduction in real income. The expenditure side of the budget is ignored in this paper, because it is assumed that the pattern of government spending is determined independently of the type of taxes which are levied.

. 8. If it were assumed that individuals reacted to changes in *money* income rather than *real* income, a tobacco tax would not have an "indirect substitution effect" on the demand for leisure. Although there is some support for such an assumption, one must be careful about abandoning this particular attribute of "homo economicus" while at the same time building up a theoretical argument resting heavily upon other (and, possibly, equally questionable) attributes.

same type of pressure on the demand for leisure and liquidity as an income tax. By reducing the real value of potential increases in income, both types of tax tend to induce shifts toward more leisure and less work (and toward more liquidity and less investment). The intensity of these shifts, of course, need not be identical for each tax, even though the taxes are of equal revenue importance.

It can be shown in similar fashion that an income tax has an "indirect substitution effect" on the demand for tobacco (and for all other goods and services). By changing the value of income in terms of leisure, the tax makes tobacco more expensive in real terms. That is, the individual must sacrifice more leisure in order to gain an additional unit of tobacco.

The interrelationships described above tend to be concealed in the indifference curve approach to consumer behavior, although they could be highlighted and developed more precisely if they were analyzed algebraically in terms of general equilibrium equations. The rather crude presentation in the preceding paragraphs, however, is adequate to illustrate the nature of the effects of commodity and income taxes on consumer behavior and to emphasize the completeness of the analogy which can be drawn. If there is an "excess burden" under one type of tax, the logic of economic theory indicates that there must be a like burden under the other. To appraise the practical significance of this deduction, the problem must first be rephrased in terms of the institutional framework within which individuals in reality must operate, and then must be subjected to statistical testing based on actual studies of individual behavior.[9]

It is important to note that taxes of the poll-tax variety change the *quantity* of income and, therefore, generate "income effects," but that such taxes do *not* change the *value* per unit of income; consequently, there can be no "substitution effect" on the individual's pattern of behavior. Whether he works more or less, spends or saves more or less, his tax liability remains unchanged.

9. One of the most important of these institutional factors is that many individuals have little, if any, freedom in balancing their relative preferences for leisure and income. Their only alternatives frequently are to accept or reject a given job. Moreover, in depression periods large numbers of workers are not able to find a market for their labor, even though their preference for leisure is very low. On the other hand, many self-employed persons have ample opportunity to offset the marginal desirability of income against the marginal disutility of work.

IV

It is possible to throw some light on the question of the relative desirability of commodity and income taxes from the point of view of consumer welfare by examining the conditions which each type of tax must satisfy in order to acquire the status of an "ideal" tax. From an economic standpoint, and putting aside distributional and fiscal policy considerations, an "ideal" tax may be defined as a tax which is devoid of all types of price-distorting effects.

With reference to a commodity tax, the article by Miss Joseph referred to earlier in this discussion concluded that an "excess burden" will be absent when the elasticity of substitution between the taxed commodity and income is zero.[1] This condition, however, does not eliminate the indirect distorting effect of a commodity tax on the price of leisure. The condition for excluding the latter effect is that the income-elasticity of demand for the taxed commodity must also be zero. In that event, an individual's decisions regarding the purchase of leisure and liquidity would not be affected by the commodity tax. If income-elasticity of demand is zero, the individual would not buy any additional units of the taxed commodity if his income were increased. The value of a potential increase in income, therefore, would remain unchanged by the commodity tax.

The interrelationship between price-elasticity, income-elasticity, and elasticity of substitution is given by the convenient formula:

Price-elasticity of demand for commodity X = the proportion of income spent on X multiplied by income-elasticity of demand for X + (1 − the proportion of income spent on X) multiplied by elasticity of substitution between X and income.[2]

When elasticity of substitution is zero in the formula, price-

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1. Zero elasticity of substitution implies fixed proportions, i.e. only one combination of income and the given commodity will yield a given quantum of consumer satisfaction. If the quantity of the commodity (or of income) is changed, the quantity of income (or of the commodity) necessary to compensate for the change and to keep the consumer on the same indifference curve is infinitely large. (The condition of zero elasticity of substitution could be satisfied by irregularities which caused "kinks" in the indifference curves. Such irregularities, however, would violate the assumption of diminishing marginal rate of substitution which underlies the ordinary indifference curve.)

2. J. R. Hicks and R. G. D. Allen, "A Reconsideration of the Theory of Value," Economica, New Series, Vol. I, Numbers 1 and 2, February and May, 1934, pp. 67, 197–202. In the above statement of the formula, income is substituted for Y in the original article. Cf., also, Stigler, op. cit., p. 79n.

elasticity of demand for the commodity must equal income-elasticity of demand multiplied by the proportion of income spent on the commodity.[3] When, in addition, income-elasticity is zero, price-elasticity must also be zero.

The conclusion, therefore, is that a commodity tax acquires the "ideal" status only when all three elasticities are zero. (By the formula, if any two are zero, the third must also be zero.) In terms of an individual's indifference map, it is necessary that all conceivable indifference curves be compressed into a single point representing the only possible combination of income and the commodity open to the individual.

When the proportion of income spent on the taxed commodity is small (the case assumed by Marshall), income-elasticity of demand will also be small, because the tax will have only a negligible effect on the marginal desiredness of money. In such circumstances, the tax will approach the "ideal" when price-elasticity of demand is very inelastic.[4] When income-elasticity is sizable, however, the "ideal" cannot be approximated, regardless of the magnitude of price-elasticity.

Turning now to an income tax, it is apparent that the same theoretical conditions are necessary in order to preclude any "excess burden" on individuals. There must be zero elasticity of demand for income in terms of leisure and liquidity, both with respect to changes in prices and to changes in income.[5] Under such circumstances, an income tax would not induce any direct or indirect effects on individual behavior which would not also be associated with a poll tax of equal revenue importance.

3. Miss Joseph derives this conclusion by formulating the above equation in terms of the arc elasticities of demand shown in her diagram (op. cit., pp. 227–228). For those readers who might want to refer to Miss Joseph's interesting article, it should be noted that she computes income-elasticity by relating the change in income to the *pre-tax* amount of income and that she computes price-elasticity by relating the change in price to the *post-tax* price. Such dissimilarity of treatment is wholly justifiable, although it departs from what has come to be the conventional (but not necessarily more logical) method of computing elasticities. When the analysis is in terms of point elasticities, rather than arc elasticities, the problem of deciding upon the proper denominators for the elasticity expressions disappears.

4. A tax on salt for home consumption is an example of a tax which appears to conform to these specifications. The regressive distributional pattern of such a tax, however, is indicative of the conflict that is likely to appear between the criterion of least price distortion and ability-to-pay considerations.

5. These elasticity conditions doubtless are close to reality for many workers. On the other hand, these conditions are quite removed from reality for large numbers of entrepreneurs and investors.

V

The conclusions to be derived from the foregoing may be summarized as follows:

1. The oft-quoted theorem that all commodity taxes are more burdensome than income taxes, for reasons other than distributional and fiscal policy considerations, cannot be substantiated on a priori grounds. Alfred Marshall's original proposition that indirect taxes result in a loss of consumers' surplus for which "there is no payment . . . to the producer or to the state" is also applicable to certain direct taxes, notably to the individual income tax.

2. The test of whether or not there will be any "excess burden" on consumers who follow the dictates of rational economic behavior is the distortion of prices caused by the tax. The only taxes which are free of price-distorting effects are taxes which are independent of the individual's reactions, such as poll taxes, taxes on true windfalls and on various types of "economic surplus" in the classical sense, and taxes based on abstract measures of ability-to-pay, such as "faculty."

3. A commodity tax will satisfy the criterion of no price distortion when income-elasticity and price-elasticity of demand are zero. In these circumstances, the elasticity of substitution between income and the taxed commodity must be zero. The burden on the individual consumer will be the same whether a given amount of revenue is raised by the commodity tax or by a poll tax of the given amount.

4. These identical elasticity conditions are necessary if an income tax is to be free of all types of price-distorting effects.

<div align="right">HASKELL PHILIP WALD.</div>

WASHINGTON, D. C.

NEGRO EMPLOYMENT IN THE AIRCRAFT INDUSTRY

SUMMARY

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particular labor markets, 615. — The rôle of labor unions, 621. — Conclusion,
623.

INTRODUCTION: EARLY OPPOSITION

Management of American industry has rarely faced the
problem of racial employment in the framework of any well-
conceived plan. Practices which had emerged prior to World
War II created the concept of the Negro as an untrained, unskilled
laborer. Even democratic public education, wedded as it had
been in the field of vocational training to the concept of preparing
workers for specific jobs in a contracting labor market, had hesi-
tated to train Negroes for mechanical work. Labor unions had
often reacted violently against colored strike breakers, and certain
craft unions, particularly in the metal trades, had a decided
prejudice against Negroes.

The racial employment patterns which occasioned and, in
turn, resulted from these circumstances made employers extremely
resistant to the use of Negroes in capacities which had not become
traditional. And it was traditional to use Negro labor only in
heavy, hot and dirty occupations. Supervisory staffs and fore-
men rapidly absorbed the attitudes of top management, con-
tributed their own prejudices, and often became an almost insur-
mountable barrier to the occupational advancement of minorities.
These patterns of industry created vested interest in certain jobs
and industries on the part of white workers, an attitude which
became more pronounced during the extreme job competition of
the depression.

With the advent of the current war effort and the resulting
need for training hundreds of thousands of workers for production
in certain vital industries, a new labor market situation was
created. Workers no longer competed for a limited number of
jobs, and the economic pattern favored the entrance of Negroes

into new industries and occupations. But such employment opportunities did not open until long after there had been serious labor shortages in industrial centers.

Nowhere is this development better illustrated than in aircraft. It was a young industry; it was destined to expand at an unprecedented rate;[1] it was dependent, for the most part, upon young and inexperienced workers; it planned to train its own labor supply. One large reservoir of potential labor was the Negro; yet, at the start of the defense program, the industry did not even consider employing colored workers. This was due in part to the fact that Negroes had never been used in the past (in 1940 there were only 240 Negro employees). It was also due to the fact that aircraft was a clean and light industry in which a large proportion of the workers were engaged in single skilled and semi-skilled occupations, just the sort of employment from which it had been traditional to exclude Negroes. Of no less importance was the industry's effort to capitalize upon the glamour of all things associated with the airplane in order to attract the cream of the labor crop. And the Negro was not only considered no part of the cream, but his employment was believed to be an impediment to securing the most desirable "native, white labor."

When, in 1940, there was pressure from the Negro community for employment opportunities in aircraft, management did not attempt to hide its anti-Negro bias. The most out-spoken opposition to the employment of Negroes was centered in the West Coast plants, where employment was rapidly expanding. For example, W. Gerald Tuttle, Director of Industrial Relations at the Vultee Aircraft Company in Southern California, addressed a letter to a Negro organization stating, "I regret to say that it is not the policy of this company to employ people other than of the Caucasion race; consequently, we are not in a position to offer your people employment at this time."[2]

This attitude, while less vocal in other sections of the country,

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1. "No industry in the history of the U. S. has grown so fast as the aircraft industry. Three years ago [1939] the building of aircraft required only 30,500 men — 10,500 less than the knit-underwear business. Today, over 200,000 workers are on aircraft's payroll — up 150,000 in two years . . . The acceleration has been tenfold in thirty months, compared to a sevenfold increase in shipbuilding during the four years of the last war." "Half a Million Workers," Fortune (March, 1941) p. 96.

2. Extract from letter addressed by Mr. Tuttle to National Negro Congress on August 2, 1940.

was nonetheless widely accepted in practice.[3] Various government agencies concerned with labor supply attempted to secure relaxations, but they had made little progress until 1942. In June of the preceding year President Roosevelt had created the Committee on Fair Employment Practice to enforce the nondiscriminatory policy established in Executive Order 8802. Despite this action, there was only slight relaxation of the color bar in aircraft in the months immediately following. On the basis of a very exhaustive survey, the Bureau of Employment Security announced that as of September, 1941, only 5.9 per cent of the establishments which anticipated hiring unskilled workers for aircraft production employed Negroes; 24.3 per cent did not then employ colored workers but expressed a willingness to do so in the future; 69.8 per cent of the firms did not then employ, and did not intend to employ, colored help.[4] But these figures do not give the whole picture. The bulk of aircraft workers are trained persons in production jobs; thus the real problem was that of opening single skilled and semi-skilled jobs to Negroes. This was made clear when pressures were put upon the industry to use Negroes and it attempted to respond by offering colored people a limited number of maintenance and unskilled jobs. An example of this attitude is reflected in the early statement of the President of the North American Aviation Company to the effect that Negroes would be employed only as janitors in the company's new Kansas City plant.

IMPEDIMENTS TO NEGRO EMPLOYMENT

Many circumstances and devices prevented the early entrance of Negro workers into production jobs in aircraft plants. The most important, of course, was the announced policy of management to bar them. In addition, some of the new plants of the industry were committed to the use of local labor only, and in many instances there were few colored workers in these restricted

3. "The industry also has its prejudices. You will find an almost universal prejudice against Negroes — and in the West Coast plants against Jews. This statement stands the test of observation; you almost never see Negroes in aircraft factories nor do you see Jews in the West Coast plants except in some engineering departments. There is little concealment about the anti-Negro policy." *Fortune, op. cit.* pp. 98 and 163.

4. Survey of Employment Prospects for Negroes in Armament Industries, Bureau of Employment Security, United States Social Security Board (Washington, D. C.), Table II.

labor markets.   As governmental and community pressure increased, management made promises, delayed action, and sometimes resorted to subterfuges.   Among the most important techniques employed to delay the use of Negroes were the elimination of Negro trainees from vocational training courses; postponement of consideration of Negroes until there were temporary layoffs or cessations in employment due to material shortages; refusal to consider Negro applicants until the local labor market had absorbed the cream of the crop and then asserting that colored applicants were not of high calibre; refusal to employ Negro trainees until there were local labor shortages, thus discouraging the development of a supply of qualified colored workers; dependence upon a single individual to recruit Negro workers, thus limiting the number of colored persons considered for employment; acceptance of untrained white workers for production jobs, while requiring Negroes to finish training courses before assigning them to similar work.   In a few plants where there were closed shop agreements, craft unions effectively opposed the employment of colored workers.

Developments in specific aircraft plants indicate how management's early policies of excluding Negroes and training officials' disinclination to admit them to defense courses complicated and limited the full utilization of this source of labor.   These events also illustrate the influence of developments elsewhere in the labor market upon the availability of colored workers for aircraft.   They indicate the manner in which labor union restrictions combined with other factors in delaying the employment and upgrading of colored workers.

EMPLOYER ATTITUDES

The situation in Buffalo was somewhat unique, in that the defense courses in the vocational schools were open to colored applicants, and there was a backlog of about 100 trained, Negro youth available for placement early in 1941.   In the summer of that year Curtiss-Wright hired its first Negro production workers, at a time when there were about 9,500 employees in the plant.[5]   From the start, the company arranged for a local Negro dentist

5. The Curtiss-Wright Corporation was one of the first aircraft producers to promise the OPM to use Negro production workers.   This action followed a direct appeal by the OPM to management in the spring of 1941.

to select colored trainees, and thus restricted artificially the universe from which colored applicants could be drawn.

Bell Aircraft was even more hesitant. In the latter firm's main plant there were no Negro workers in the summer of 1941; at the new plant in Niagara Falls, N. Y., there were about 20 colored sweepers. By the fall of the year Bell had four Negro production workers, and seemed reluctant to put on more, although several scores of trained colored youth in the community were anxious to enter the industry. The Aviation Division of the UAW-CIO offered its coöperation in effecting the employment and integration of colored workers, but it was not until April, 1942, that Bell hired its first skilled Negro.

By the time Bell had opened up and Curtiss-Wright was ready to go ahead with a real non-discriminatory employment policy, certain developments had occurred in the Buffalo labor market. There was a labor shortage, and Negro men were finding good paying jobs in other industries. Unskilled laborers in iron and steel plants and automobile factories earned more than production workers in aircraft. Skilled workers were better paid in other industries, and the neighboring Lackawanna plant of the Bethlehem Steel Corporation had taken the lead in opening new and better jobs to Negroes.[6]

Although similar delays were encountered in the training and employment of Negro women, there was not as long a time lag between the introduction of white women and the acceptance of Negro women in the Buffalo aircraft plants as in the case of men.[7] By the latter part of the summer of 1942, Curtiss-Wright was training and hiring an average of thirty colored women a month. At the same time, colored women were being accepted from the Employment Service and at the gate, as well as through the Negro dentist. At Bell there were still two evidences of discrimination: all Negro applicants were required to take blood tests, while whites were not; and colored men and women could get semi-skilled and single skilled jobs only after completing training courses, while many whites were hired and trained on the job,

6. See the present writer's "With the Negro's Help," *Atlantic Monthly*, CLXIX (June, 1942), p. 700.

7. For example, Curtiss-Wright stalled on the employment of colored women from approximately April until the latter part of May, 1942; Bell Aircraft started the use of white women about April but delayed employing any colored until the latter part of June, 1942.

because they "seemed to be the right type." In spite of these difficulties, Negro men and women could get into the aviation industry in Buffalo by late summer of 1942, if they took vocational education, NYA, or Curtiss-Wright training courses — all of which were open to them. Since, however, trainees were not paid and most colored males in the labor market were employed, this late relaxation did not result in the entrance of large numbers of male Negro workers into the Buffalo branch of the industry. Because Negro women entered the plants with less delay than Negro men, they were absorbed at a more rapid rate. This was reflected in the wider participation of colored women in defense training for aircraft in the vocational schools; by November, 1942, there were 145 Negro women in this training.

Most of the Long Island aircraft plants limited their employment to bona fide residents of Nassau and Suffolk counties; consequently the bulk of aircraft training was centered in the schools of these counties, and only local residents were accepted. It was generally known that Negroes were not hired for production work, and few applied for defense training. Those who did attempt to enter the courses were weeded out by aptitude tests.[8] By the fall of 1941, so much pressure had been put upon the State Employment Service to refer Negro trainees that all who had ever applied were suddenly told to come in for referral, and tests were eliminated. At the same time trainees from Queens were accepted. This opened a larger field from which to select Negro applicants, since the colored populations of Jamaica and Flushing could be tapped; it did not, however, reach the centers of Negro concentration in Manhattan. By November, 1941, there were about 20 Negroes in the Long Island training schools for Grumman and Republic, and they included about all the colored male youths in Nassau and Suffolk counties who were interested in aircraft training. These trainees and a few other local male Negro workers were ultimately hired.

In accordance with the usual pattern, Negro women were not accepted for employment in the Long Island aircraft factories

8. Although it is difficult to be sure about such tests, a spot check in the summer of 1941 indicated that these tests seemed to be fair. This is a tentative conclusion, however, since more detailed analyses of aptitude tests in other localities indicated that they were often used as justification for eliminating certain groups which were considered undesirable in a loose labor market.

until after white women had been used for some time. In October, 1942, however, Brewster, Republic and Grumman began to employ a few colored women on production work.

At this point, the problems of the colored female aircraft worker were complicated by a muddle in defense training. The NYA operated two defense training centers on Long Island — one at Oyster Bay and the other at Glen Cove. Slightly less than a hundred colored women were enrolled in these courses, some of which were in aircraft. A much smaller number of Negro women was in the Long Island vocational schools. There seemed to be competition between the two sources of training, since the total number of available trainees was less than the capacity of the facilities. NYA began to train women in anticipation of the needs of the labor market; the vocational schools, in accordance with their pre-war habits, refused to admit women until the plants were definitely committed to their employment. And equally in accordance with tradition, the vocational schools were reluctant at first to accept Negro women; NYA, on the other hand, welcomed Negro women. But the aircraft plants did not welcome NYA trainees. Thus, white women trainees of the vocational education courses were being readily employed in late summer, 1942, while many Negro women trainees of NYA could not get jobs.

Many of the NYA girls had been trained in woodwork, an occupation wholly unrelated to aircraft, and they were quite discouraged when they could not get jobs. At Oyster Bay, NYA offered three courses; one of these was in machine shop, and there was no demand for its trainees. Most of the Negro girls were in this course, which, in addition to being least productive of placements, required the longest period of training. Those colored girls who finished the vocational education courses for Grumman and Republic, on the other hand, were virtually assured of employment. By October, most of the women who had been at the two NYA centers were transferred to the vocational educational defense schools and were going from the schools into plants without much difficulty.[9] Meanwhile, colored men were continuing to find a limited number of jobs in the larger Long Island Aircraft plants; they were admitted to any training school, and they were hired

9. This is one of the few instances in which NYA failed to offer much more extensive training opportunities for Negroes than were available to them in the vocational schools.

by Grumman, Republic, or Ranger as fast as they finished.[1]

The Allison Division of General Motors was the largest aircraft plant in Indianapolis, Ind. From the start management took the position that Negroes should be introduced into production capacities slowly, if at all. This policy was defended on the ground that white workers might object to the use of Negroes in higher type jobs. Apparently this, in turn, was based upon the experience in General Motors and other automobile plants in connection with the upgrading of colored workers.[2] Such a position confused the issue; the situation in the automobile industry was quite different from that at the Allison plant. In the first instance, there was a long tradition of restricting Negroes to unskilled and heavy, dirty jobs, and white workers had come to expect colored workers only in such capacities. Thus the existing color occupational pattern had created an attitude of opposition to the upgrading of Negroes. But the Allison plant was new, it had no traditional racial occupational pattern, and management could, as it did, establish a pattern which would gain acceptance by the majority of workers.

From the time of its opening and until at least the fall of 1943, Allison restricted Negro workers to unskilled and service

1. The defense courses set up in the vocational schools of Paterson, N. J., served the local Wright Aeronautical Company plant and the Caldwell, N. J., Curtiss-Wright Propeller plant. Few, if any, Negroes were hired by these two factories during the first three quarters of 1941, and there were no Negro production workers on either payroll. (According to information supplied the writer by the New Jersey Urban League in June, 1941, there were 16,000 workers at the Wright Aeronautical plant, of whom 60 were Negro laborers.) When Negro applicants attempted to enter the defense training courses, they were eliminated by tests which had been developed by the Wright Aeronautical Company. A sample study of three days' tests showed that less than 42 per cent of the applicants were successful. No Negroes passed; less than 18 per cent of the Italians were accepted; less than 24 per cent of the Jewish applicants passed; less than 50 per cent of other European nationalities were successful; but approximately 68 per cent of the applicants of "Anglo-American" extraction were admitted to the courses. It is significant that in other New Jersey cities the rate of rejection for all nationalities and races varies from none to 12 per cent. Finally there was an intensive investigation of the situation and the training bottleneck was broken. In a year's time, 500 Negroes were on the payroll at the Wright plant in Paterson.

2. For a description of the experience in upgrading Negroes in automobile production, see the present writer's "Detroit and Negro Skill," Phylon, IV (1943), pp. 131–34; and Lloyd H. Bailer, "The Negro Automobile Worker," Journal of Political Economy, LI (October, 1943), pp. 415–28.

jobs. Although a few were classified as semi-skilled, none was on the production line. As in many other plants, the initial assignment of colored workers to certain lower levels of employment became a justification for failure to upgrade them.[3] In time the early occupational pattern established by management became the chief element in white workers' opposition to Negro upgrading. It also had repercussions for the growth of Negro employment. The concentration of Negroes in occupations such as custodial workers, parts washers, sub-foremen, and crew leaders resulted in a ceiling upon the total Negro employment in the plant, and ultimately complicated management's problems of labor recruitment, since certain occupations became "Negro jobs" and available white workers would not accept them at the time when colored workers were no longer available.

UNION ATTITUDES

Boeing Aircraft at Seattle was one of the few aircraft plants which established relationships with organized labor early in its development. It had a union shop agreement with the International Association of Machinists, A. F. of L., making membership in the union a condition of employment. This union has had restrictions barring Negroes since its inception, and it still has a ritual provision limiting membership to white persons.[4] Although

3. The situation at the Buick Aviation Plant in Chicago was somewhat similar. When, in the late summer of 1941, the Buick plant began to absorb trainees and other workers, there were many job applicants in the Chicago labor market, a disproportionately large number of whom were Negroes. No Negro trainees and relatively few Jews were accepted at Buick. The case was referred to FEPC and became the basis of the charges against the company which were presented at the hearings of the Committee in Chicago.

Negroes were at a further disadvantage in this and in many other aircraft plants, because they could not present birth certificates. There were, in the fall of 1941, some 1,500 Negro applications filed with the new Buick plant. There were about 200 trainees employed; none was a Negro. The colored employees were restricted to unskilled, janitorial, maintenance and helper work. At the beginning of 1942, when total employment had increased to several thousands and over 300 trainees were on the payroll, there were about 30 Negro workers; all of them were in laboring or unskilled work. At this point, layoffs in other Buick plants endangered the increase in Negro employment. In the summer of the year, there were about 250 colored workers in Buick; they were still restricted to non-production jobs. Twelve months later, the occupational pattern was substantially the same, and the total Negro employment was about 350. In the meantime, there had been much greater increases in total employment.

4. For a discussion of this union and Negro workers in aircraft, see Herbert R. Northrup, "Organized Labor and Negro Workers," *Journal of*

the company stated that it would hire any qualified American, regardless of racial identity, provided the union would clear him, not all the blame for Negro exclusion can be placed on the union, since the company failed to employ Negroes prior to 1935, when it had no union agreements.

The issuance of the President's Executive Order barring discrimination in defense plants on account of race, creed or color placed Boeing in something of a dilemma: it had contracts with the Government requiring non-discrimination, and, at the same time, it had a union-shop agreement with a labor organization which officially practiced discrimination. The union, however, was ready and willing to take the pressure off management and defend the status quo on the grounds that it was protecting the Machinists' established racial policy and the sanctity of collective bargaining agreements.

But this was not all of the picture. On July 11, 1941, Bernard Squires, Executive Secretary of the Seattle Urban League, appeared before a meeting of the local union where more than 1,300 members were present. Mr. Squires reported that after he had presented the problem, the group unanimously passed a motion to allow Negroes to work in the plant. The action was subsequently rescinded by the union's Executive Board, on the ground that the meeting was dominated by communists.[5]

When the handful of Negro trainees who had completed defense courses in the local schools applied for employment at the Boeing plant, management did not flatly refuse to hire them; rather, it informed them of the company's agreement with the union and said that it would be impossible for them to work more than a few days before the union would request their discharge. At the same time, the supply of potential Negro production workers was kept to a minimum by the actions of instructors and advisory defense training committees. Both groups, which were drawn from union officials, plant employees and management representatives, repeatedly discouraged Orientals and Negroes from entering aircraft training in the Seattle schools.

Political Economy, LI (June, 1943), pp. 206–21, and the present writer's "Recent Events in Negro-Union Relationships," ibid., LII (September, 1944), pp. 242–46.

5. The subsequent proposal of the Machinists' local at Boeing to repeal the white clause in the International's ritual gives support to Mr. Squires' report. See the present writer's "Recent Events in Negro-Union Relationships," loc. cit., note 27, p. 243.

No final solution of this problem was achieved until the President's Committee on Fair Employment Practice referred the policies and practices of Machinists local No. 751 at Boeing to the President. As a result of this action, arrangements were made for the issuance of work permits to Negroes.[6] Even when the International Officers were ready to coöperate in this arrangement, the local union officials opposed it. Here again, constant delays in opening job opportunities limited the number of Negro workers employed. At the time of the first placements (1942) there were no Negroes in defense training aircraft classes, no Negro registrants either at the local employment service or at the Urban League, and little prospect of finding local colored applicants for employment. Other types of employment, particularly at a local shipyard and at a Quartermasters' Depot, had absorbed the available manpower. As late as the spring of 1942, the officials of the Boeing Machinists' local were still objecting to Negro employment on the ground that the use of Negroes represented a change in the agreement between the union and the company and would adversely affect production efficiency.[7]

In the summer of 1942, Boeing Aircraft was open to Negroes. Many of the past difficulties had been removed: management seemed ready to fulfill its obligation with respect to the employment of Negroes; the hostile attitude of aircraft training instructors had greatly abated. The union was ready to clear colored workers, and had but one reservation — that the colored workers be local persons. In time, this restriction also gave way, and Negro employ-

6. Ibid., p. 242–43.
7. The position of the Machinists' local No. 1125 at the Consolidated Aircraft Company in San Diego, Calif., is difficult to determine. Management asserted that the union had not been in favor of the upgrading of Negroes when that problem had been presented to it. Indeed, the subsequent approach of management to this matter was alleged to have been based upon the union's suggestion that colored workers be accepted in clerical capacities in the administration offices before they were considered for employment in production jobs. On the other hand, officials of the local stated that they had not objected to the upgrading of Negroes, provided the influx of colored workers was not over-stimulated. These allegations have some support in the fact that the local had accepted Negro members despite the International's ritual bar to them. This much can be said: the Machinists did not have a closed shop or a membership-maintenance agreement; they did have bargaining rights. In this situation, the selection and assignment of workers was exclusively in the hands of management.

ment at the plant grew.[8]

METHODS OF INTRODUCING NEGRO LABOR

Perhaps the most significant, and certainly the earliest, example of a sound approach to the integration of Negroes in aircraft production occurred at the Lockheed-Vega Plant in Southern California. In the spring of 1941, the President of the Corporation wrote to the Office of Production Management as follows: "In the matter of employment for Negroes, we are aware of the problems involved and are sympathetic with the aims of utilizing all available skills and aptitudes in furthering the defense program. Our Industrial Relations Department is making an exhaustive study of this subject."

When, in August of that year, the company was ready to act, the Secretary of the Corporation addressed a memorandum to all executives and supervisors, outlining company policy and the reasons for initiating a program of hiring Negro workers.[9] The following fundamental principles underlay the approach of

8. In the latter part of September, there was a threatened walk-out of white mechanics, because two Negro semi-skilled workers had been hired at the Curtiss-Wright plant at Robertson, Mo. (just outside St. Louis). When this unrest first appeared, management consulted representatives of the International Association of Machinists, who were in process of organizing the plant. These officials stated that they had no objections to the hiring of Negroes in skilled capacities, that the workers as individuals, rather than as union members, objected, and that the union's business agent had said nothing one way or another on the matter. The union's grievance committee stated further that a strike could not be authorized on the issue, but that the men might individually quit in protest. Despite these statements, it seems clear that the Machinists gave off-the-record support to the opposition to Negroes. The union took no steps to encourage the acceptance of Negroes in production capacities in the plant. When, finally, Negroes were accepted in production capacities (in a segregated plant) management took the leadership and determined the policy.

9. "I am sending you herewith a copy of an executive order issued by President Franklin D. Roosevelt which we propose to post on the bulletin boards for the information of all employees. While Lockheed Aircraft Corporation and Vega Airplane Company have never had any discriminatory policies with regard to race, color, or creed, it is, nevertheless, a fact that no Negroes are now in the employ of either company.

· After giving full consideration to this fact, the management of Lockheed and Vega have decided that, in line with their policy of coöperating fully with the Federal Government in the national defense program, special effort will be made immediately to comply with the request of the President and the Office of Production Management that 'plans for their (Negroes') training and employment in capacities commensurate with their individual skills and aptitudes should be undertaken at once.'

the Corporation to this problem: (*a*) the company proceeded after it had developed a comprehensive plan for dealing with this matter; (*b*) management instilled a feeling of coöperation and a sense of responsibility for the success of the plan in all executives and supervisors; (*c*) management was positive and firm in its statement and approaches to the problem; (*d*) from the outset management was committed to a policy of selecting carefully the workers who were to pioneer the way for Negro employment.

On August 15, when the company had 41,000 persons on its payroll, it announced in its employees' paper, The Lockheed-Vega Star, that Negro workers were to be introduced. The article which made this announcement contained an extract from the memorandum cited above and a direct quotation from a similar communication addressed to Aeronautical Lodge No. 727, International Association of Machinists.[1] Then, in accordance with management's plans, Negro workers were interviewed and employed. Shortly after this program was initiated, the Director of Industrial Relations summarized the early experience as follows:

"You may be interested to know of the progress we have made in employing Negroes since our 'statement of policy' a few weeks ago. During the last few weeks we have employed 31 Negroes, 22 of whom have been placed on mechanical work in various departments of the factory, 5 on stockroom and parts handling work, and 4 on common labor. As you see, we do not practice segregation of Negroes, and I am happy to say that our supervisors and employees are entering into this program with a wholesome attitude."[2]

The June 26, 1942, issue of the Lockheed-Vega Star carried an article entitled, "Adherence to U. S. Employment Policy Restated." The article reviewed the company's earlier state-

It is my earnest hope that the subject will not be made an issue for excessive discussion, and I am sure that it will not become an issue if all employees in positions of authority lend their full interest to this program.

When and where a member of the colored race is employed, it will be with full consideration of his personality, character, aptitudes and skill, so that he should be given full opportunity to adjust himself to his job and associates.

If all supervisors do their part, I am sure that the problems involved in the employment of Negroes will be handled effectively."

1. For a discussion of the position of the Negro as a member of the Machinists' unions, see Northrup, op. cit., p. 220 and the present writer's "Recent Events in Negro Union Relationships," loc. cit. pp. 243–46.

2. Communication addressed to the present writer by R. Randall Irwin, Director of Industrial Relations, Lockheed-Vega Corporation.

ments on Negro employment and concluded with a paragraph emphasizing the need for using local labor wherever possible, regardless of sex. During the month of June the first Negro woman was appointed as a production worker and on the third day of her employment received a promotion. As of August, the Lockheed Aircraft Corporation employed 400 Negroes, of whom approximately 50 were women. Vega Aircraft Corporation employed 202 colored workers at that time. By the end of 1942, Lockheed and Vega employed over 1,000 Negro men and women as technical, clerical, skilled, semi-skilled and unskilled workers; on March 31, 1943, there were over 2,500 colored workers in the two plants.

Although the North American plant at Kansas City is well known because of the early statements issued by officials to the effect that Negroes would be used only as janitors,[3] the effective work which it, the local community, and the Government did to integrate colored men and women is less generally known. When the discriminatory employment policy was announced, national publicity was given to the incident. The local Negro community united in loud and effective protest, and Government, through the Labor Division of OPM and FEPC, began to press the company to change its policy. Although no new decisions had been determined at the home office, the local management at the Kansas City plant adopted a temporary policy of no discrimination in hiring workers.[4] The problem of translating this attitude into reality was difficult, and it offers one of the few instances in aircraft where the use of Negroes on production jobs was at least considered, if not effected, from the time operations began.

In response to management's request, school officials began to train Negroes for aircraft before the plant was completed. Repeated shortages of materials delayed the assignment of Negroes to production jobs; it also increased the suspicions in the Negro public.[5] By February, 1942, a beginning had been made in assigning Negro trainees to production jobs; but management was still thinking in terms of having certain sections manned entirely by Negroes.

3. See p. 599 above.
4. The plant manager was from the Bethlehem Steel Company, where he had had experience with skilled and semi-skilled Negro workers.
5. While these delays were occurring, the matter of employing Negro women was discussed, and management stated that colored women would

In March the idea of separate sections was abandoned, and a few Negro trainees had been placed on instrument assembly and sheet-metal fabrication. Since most of the Negro trainees were subject to the draft, only a part of the 100 available could be called to work; but there was a sizable backlog of eligibles. As the total Negro employment increased, some of the colored trainees were hired. Soon management reported that Negroes were opening new jobs for themselves; that is to say, they were doing their work so well that foremen were asking for colored workers in various departments. Negro women enrolled for sheet-metal training courses for North American; meanwhile colored men continued to enter new departments. By the first of June there were about 175 Negro employees. Then shortages of material developed, which resulted in a delay in the employment of colored women. This situation prevailed for two months, but the company indicated that it intended to use colored women.

In the fall of 1942, management had arranged for the training and upgrading of Negro janitors. For a long time there had been a just complaint that colored service workers could not get a chance to improve their status. This move and a concurrent one to recruit Negro sheet-metal workers attached to other industries came to nothing, as a result of the wage-rate structure: workers in aircraft sheet-metal received 60 cents an hour as a beginning rate, whereas janitors earned 75 cents an hour and construction workers much more. By October colored women were entering production jobs in a steady, if small, stream. There were 62 so employed. In November, there were 500 colored male and female workers in 18 departments.

The Wright Aeronautical Corporation at Cincinnati, Ohio, hires more Negroes than any other aircraft plant in America. This factory is engaged in the production of airplane motors, and its early acceptance of Negroes was closely associated with the traditional use of colored labor in the foundries of automobile engine plants. Similarly, in the later developments at the Cincinnati plant, the UAW-CIO played an important rôle.

By the winter of 1941, the Wright plant employed 500 Negroes out of its 5,000 workers, but the Negro employees were limited to foundry and unskilled work. Management continued to assert

be considered and hired when, and if, female labor in general was introduced. It was expected that all available men would be used before women were hired.

that Negroes and whites could not work together, and it hesitated to integrate colored workers into new sections or departments for fear that its "finely balanced" production program would be upset. It defended its racially restrictive policy by citing the undeniable fact that Wright hired more and a larger percentage of Negroes than any other defense plant in the area.

There were repeated protests from Negroes in the local labor market; FEPC and OPM received many specific complaints, and the UAW-CIO entered the area in an attempt to organize the plant. The earlier developments at the Curtiss-Wright plant in Columbus supplied the principal basis for the unions' appeal to Negro workers.[6] While management insisted that the time was not ripe for abolition of segregation and racial occupational limitations, the UAW-CIO promised equal job opportunities and no segregation.

At the beginning of 1942, the situation was substantially unchanged; there were some 600 Negro workers, but the occupational pattern was the same. The UAW, however, had begun to concentrate upon the foundry because of its strategic importance in supplying parts for the rest of the factory. It was clear that if the union could control the initial stages of production, it would be in a powerful bargaining position; because of the concentration of Negroes in the foundry, where these stages were centered, it was most important to organize them.

During the period of organizational campaign, Negroes participated freely in the affairs of Local 607 of the Aircraft Division of the UAW-CIO. Colored organizers were used, and constant

6. In the fall of 1941, there was a strike at the Columbus, Ohio, Curtiss-Wright plant. According to press releases, the cause of the work stoppage was the assignment of a Negro to the tool and die department. The UAW-CIO was engaged in organizing the plant; and although the strike was not caused solely, or primarily, by the upgrading of the colored worker, a union leader had capitalized upon that event to raise the race issue and crystallize the dissatisfaction of the workers. The International promptly entered the picture, assumed its responsibility, and removed the representative who had accentuated the racial aspect of the problem. The union also threw its weight behind a program for equal job opportunities for Negroes. From that time on, the employment of Negroes progressed, and both men and women were employed in many production capacities. Although the company had initiated the assignment of Negroes to production jobs, the action of the union in settling the strike and the union's subsequent insistence upon non-discrimination in employment accelerated its development; thus the union was in a position to claim credit for a part of the favorable racial occupational pattern at the Columbus plant.

appeals were made to Negroes. The continuing concentration of Negro men in certain departments, their exclusion from the machine shop and more highly skilled jobs, and the stubborn refusal of the company to use Negro women, offered fertile material out of which to make an effective campaign. Meanwhile the plant employed an able and experienced Negro personnel man; it also continued to hire a large number of colored workers, although no great changes were made in the racial occupational pattern.

The combined force of the Federal Government, the local UAW union, and the inside pressure of the Negro personnel officials secured more relaxations. New departments and better jobs were opened to Negroes, though on a segregated basis. Wright was the first large plant in the Cincinnati industrial area to open its doors to Negro women; at first they were greatly limited occupationally, but their employment possibilities gradually expanded. By the latter part of 1943 the union was well established and Negroes played an important part in its administration. In the union election early in 1944 there were many Negro candidates for office, and an appreciable amount of intra-union racial tension developed.[7] After the election, additional progress was made in Negro employment, and Negroes continued to participate in the affairs of the union. When, for example, a Negro chief steward was suspended on a charge of sabotage, he was completely exonerated and restored to his former job. This was accomplished largely through the activities of the UAW-CIO local.[8]

LABOR UTILIZATION

In 1940, the 240 Negroes in aircraft constituted only 0.2 per cent of those in the industry. By the summer of 1944, there were over 95,000 non-white workers (of whom about 95 per cent were Negroes) in aircraft, and they constituted about six per cent of the total. Some 30,000 non-whites were producing airframes; over 43,000 were in aircraft engine parts plants; about 1,400 were in aircraft propellers and propeller parts factories; and 20,000 were engaged in making miscellaneous aircraft parts.[9] This growth in

7. Monthly Summary of Events and Trends in Race Relations (Fisk University, Nashville, Tenn.), February-March, 1944, pp. 4-5.
8. *Ibid.*, June, 1944, p. 4.
9. Negro employment in aircraft is concentrated in aircraft engine production. Although it represents, in part, the transfer of workers from automobile to aircraft engine work, there are several new aircraft engine plants

participation has been uneven and is, for the most part, of recent origin. It resulted, as all increases in Negro employment in war production, principally from the tightness of the labor market and the attempts to enforce the executive orders banning discrimination in defense employment.

Most of the increase in Negro participation occurred after the close of 1941.[1] During the first six months of the following year there was an appreciable rise, and by July about 33,000 colored workers were employed in the industry. After the summer of 1942, the growth of non-white employment was fairly constant (Table I).

TABLE I

PER CENT OF NON-WHITES IN AIRCRAFT PLANTS

1942			1943					1944	
May	July	Nov.	Jan.	Mar.	May	July	Sept	May	July
1.6[a]	2.9	3.3	3.0	4.0	4.4	4.6	4.9	5.3	6.0

a This figure is based upon an extremely small sample. The others are derived from very complete coverage.

It is difficult to measure accurately the extent to which all elements in the local labor market have been absorbed by any given industry. There are, however, certain interesting leads. We know, for example, the proportion of non-whites and Negroes in the populations of our cities in 1940. We have up-to-date figures for the percentage of non-white workers in war industries, by localities; and we are able to compute the percentage of non-white workers in selected aircraft plants, the majority of which are the larger establishments in the industry. By comparing these percentages, we may draw some rough conclusions concerning labor utilization. For example, if a given plant hires a larger proportion of non-whites than all war industries in the area and in excess of the 1940 percentage of Negroes in the population, it is safe to say that it has done a good quantitative job of utilizing

which have large numbers of Negroes. The most important are Wright at Cincinnati and Paterson, N. J., Buick and Dodge in Chicago, and Pratt and Whitney in Kansas City. Negro employment in other branches of the industry represents new types of jobs, largely unrelated to earlier patterns of racial employment.

1. Cf. the present writer's "With the Negro's Help," loc. cit., p. 701.

minority groups. The more detailed account of racial occupational patterns offers a key to the qualitative aspects of this question.[2]

With the exception of those establishments which draw their principal Negro labor supply from New York City, all of the aircraft plants in the East included in the survey are in areas of acute labor shortage or labor stringency. All of the West Coast plants are in areas of acute labor shortage. Thus, in these areas, economic factors are operating to accelerate the employment of local Negroes and encourage the in-migration of others. In contrast, only one of the Southern plants is in an area of labor stringency; the rest are in areas with labor surpluses. One of the centers of aircraft production in the Middle West, Chicago, is an area of acute labor shortage; three are areas of labor shortage; two are areas with slight labor surpluses; one is an area of substantial labor surplus.

On the basis of the criteria of labor utilization outlined above, it is possible to arrive at some tentative conclusions. Pratt & Whitney, like most defense plants in the Hartford, Conn., area, has not achieved anything approaching full utilization of Negroes. The Bell and Curtiss-Wright plants in Buffalo, N. Y. have done better; but, because they were late in accepting colored production workers and other local industries offered these workers earlier and better paying job opportunities, the degree to which they have used Negro labor is far less than that for all war plants in the area.[3] During this war New York City constantly has been an area of labor surplus, and the Long Island aircraft plants have not used as high a proportion of Negroes as other local war industries. This is due to several factors: the early patterns of exclusion discouraged the entrance of Negroes; the distance of the plants from the centers of Negro population also contributed to

2. With a few notable exceptions, such as Vultee at Nashville and Beach at Wichita, the plants included in Table II employed Negroes in production capacities. There were a few technical and professional Negroes in the industry, and colored men and women were in some skilled occupations. There were few supervisory jobs held by Negroes. In the border states (between the North and South) and in southern plants, Negro production workers were usually assigned to separate factories or units. Elsewhere they were generally integrated on production lines.

3. In the summer of 1944, Bell hired about 550 Negroes and Curtiss-Wright about 1,300. In both plants colored men and women were used on many operations.

TABLE II

PROPORTION OF NON-WHITES IN SELECTED INDUSTRIAL CENTERS, 1940; PROPORTION OF NON-WHITES IN WAR INDUSTRIES, 1943 AND 1944; AND PROPORTION OF NON-WHITES IN AIRCRAFT INDUSTRY, SUMMER, 1944

	Per Cent Non-White Population, 1940	Per Cent Negro Population, 1940	Per Cent Non-White War Workers			Per Cent Non-White Workers in Aircraft	
			Nov., 1943	May, 1944	July, 1944	Plant	Per Cent Summer, 1944
(Areas of current acute labor shortage)							
Hartford, Conn.	4.3	4.3	2.5	2.2	2.2	Pratt & Whitney	small
Buffalo, N. Y.	3.2	3.1	5.9	5.9	8.2	Bell	2.2
						Curtiss-Wright	3.1
Baltimore, Md.	19.4	19.3	15.0	15.2	16.1	Martin	5.8
Chicago, Ill.	8.3	8.2	8.8	10.0	10.3	Buick	16.0
						Studebaker	10.0
						Dodge	11.0
						Douglas	4.8
Los Angeles, Cal.	6.5	4.2	4.6	5.1	5.3	Lockheed-Vega	5.0
						Douglas	4.5
						North American	7.2
						Vultee	3.2
San Diego, Cal.	3.1	2.0	3.3	4.0	4.0	Consolidated	2.7
Seattle, Wash.	2.9	1.0	2.5	3.4	4.3	Boeing	2.9
(Areas of Labor Stringency)							
Paterson, N. J.	3.1	3.1	4.6	5.2	5.3	Wright	8.9
Columbus, Ohio.	11.7	11.7	11.3	12.2	14.2	Curtiss-Wright	9.4
Indianapolis, Ind.	13.2	13.2	9.0	9.2	10.5	Curtiss-Wright	8.3

						Company	
Wichita, Kans.	5.0	4.9	2.2	2.5	2.6	Boeing	2.6
						Beech	0.4
						Cessna	3.6
Oklahoma City, Okla..	9.6	9.5	6.5	6.5	6.3	Douglas	4.0
(Areas of slight labor surplus)							
Cincinnati, Ohio	12.2	12.2	9.3	9.5	10.8	Wright	18.1
Kansas City, Mo....	10.5	10.4	8.7	10.1	10.2	Pratt & Whitney	8.5
Kansas City, Kans ...	17.3	17.3				North American	8.3
Nashville, Tenn.......	28.3	28.3	8.8	9.4	9.4	Vultee	4.9
Atlanta, Ga...	34.6	34.6	13.2	13.3	12.8	Bell	6.3
Dallas, Texas......	17.1	17.1	6.6	8.1	8.0	North American	6.5
Fort Worth, Texas	14.3	14.2	5.5	7.5	7.7	Consolidated	3.2
(Areas of substantial labor surplus)							
New York, N. Y............	6.4	6.1	5.6	5.9	5.7	Grumman	3.2
						Republic	3.1
St. Louis, Mo.	13.4	13.3	10.0	11.0	10.8	Curtiss-Wright	3.5

this result;[4] the failure of these aircraft plants to expand greatly after they had begun to employ Negroes freely established an automatic ceiling upon total non-white employment. The one Eastern aircraft plant covered in this survey which employed a large proportion of Negro workers is the Wright Aeronautical plant in Patterson.[5] This is probably due to two or three factors: this plant manufactures airplane engines and hires a large proportion of workers in occupations which have become traditionally Negro jobs; the Wright Company has generally assumed responsibility for securing wide utilization of Negroes; the Paterson plant, like that in Cincinnati, has hired an able Negro personnel man to assist in recruiting and upgrading colored workers.[6]

Because of their late introduction and the relegation of Negro production workers to a subassembly factory, a much smaller percentage of Negroes is in the Martin aircraft plant than in other Baltimore war industries.[7] There are, however, about 2,000 colored workers in the Martin plant, a large proportion of them on production work.

The aircraft plants on the West Coast covered by this survey have generally done a fair job of Negro labor utilization. It varies in degree from company to company, with North American doing the best quantitative job and Lockheed-Vega and Douglas doing

4. This is reflected by the fact that the largest numbers and proportions of Negro aircraft workers in the area are concentrated in two Brooklyn plants, Sperry Gyroscope and Ford Instrument.

5. In the summer of 1944, Wright hired over 3,500 Negro men and women in a wide range of jobs.

6. During World War I, Negro personnel officers were generally used to foster anti-union attitudes and facilitate company programs of paternalism. In many instances the Negro personnel men hired today have greater authority and have avoided these two pitfalls (a few have been little better than those of World War I). Most of them have been trained in personnel work and dedicated to integrating colored workers. Wright and Curtiss-Wright, on the whole, have a good group. There has, however, been an unfortunate tendency at Wright plants to concentrate all Negro employment in the office of the Negro personnel officer. This action and the tendency to assign Negroes to the newer of several factories under a given management have tended to reduce the degree of integration of non-white workers.

7. In contrast to the Baltimore plant, the Omaha, Neb., Martin factory hires a significant percentage of Negroes. While the proportion of Negroes in Omaha is much smaller than that of Baltimore, the proportion of Negro workers in the local plant is almost as high as the figure for Baltimore. In the summer of 1944, about 5.5 per cent of the Omaha employees of Martin were Negroes.

the best qualitative job.[8]   In all of the centers of aircraft pro-
duction on the West Coast there has been heavy in-migration of
Negroes since 1940, and the proportion of colored workers in Los
Angeles, San Diego, and Seattle is higher today than it was four
years ago.[9]

The most favorable numerical situation in the Middle West
is that in the Wright plant at Cincinnati, where management and
the union have alternated in taking the lead in encouraging Negro
employment.[1] Chicago, which is the tightest labor market in the
area and which specializes in aircraft engines, presents a favorable
picture. It is not as favorable as the percentages might suggest,
since only the largest plants are covered and the in-migration of
Negroes has been greater than that of whites, so that Negroes now
constitute about 10 per cent of the total population. Although
Negroes are concentrated in traditional occupations, some colored
workers are in highly skilled work, and upgrading into more desir-
able single and semi-skilled jobs has been slowly progressing in
the last year.[2] Curtiss-Wright at Columbus has given employment
to several thousand Negroes. The qualitative picture is good; a
large proportion of the Negro workers are females; and many of
the colored workers are in new types of jobs.[3] The somewhat
favorable picture at Kansas City is due, in part, to the fact that
aircraft engines are produced in the Pratt & Whitney plant, where

8. Northrup is definitely in error when he says that a larger number of
Negroes is employed in the Oklahoma Douglas plants than in those on the
West Coast.   Herbert R. Northrup, Organized Labor and the Negro (New
York: 1944), p. 208.   In the summer of 1944, there were about 900 Negroes
in the Oklahoma City plant and less than 500 at the Tulsa plant.   Douglas
in California hired over 2,000 Negroes.

9. The plants covered in this survey are the largest establishments in
the industry, and they have the most favorable racial employment patterns.
Results based upon their practices are somewhat more favorable than the
over-all situation; but by the sheer fact that they employ the vast majority
of West Coast aircraft workers, the total statistical picture would not vary
greatly from that presented above.

1. In the summer of 1944 over 6,000 Negroes were employed at the
Wright plant in Cincinnati.   Almost a half were in the foundry division.
Although there is a general pattern of segregation in job assignment, Negroes
are employed in almost all occupations and major divisions of the plant.

2. Douglas, with over 3,000 Negroes, is the largest employer.   Buick,
which has 2,000 colored men and women, now employs them in a wide range
of occupations.

3. Curtiss-Wright at Columbus has about 2,500 Negro workers.   These
men and women are employed throughout the entire plant in almost all types
of production jobs.

over 1,500 Negroes are now employed in many occupations. Progress in the utilization of Negro labor in the North American plant in Kansas City is more significant, because it, like the situation at Curtiss-Wright in Columbus, represents the establishment of entirely new racial occupational patterns.[4] In Wichita, one plant, Boeing, has established a favorable picture. The worst situation in the region exists at the Curtiss-Wright plant in St. Louis. It affords another example of the fact that segregation spells lesser job opportunities and discrimination.[5] The Curtiss-Wright plant at Indianapolis has made only slight progress in upgrading, but it has done a better job in the numerical employment of Negroes than the St. Louis factory.

The picture in Southern aircraft plants is uniformly bad; the least bad situations occurring at the Douglas plant in Oklahoma City,[6] the North American plant at Dallas,[7] and the Bell plant at Atlanta.[8] With the exception of Oklahoma City, all of the Southern establishments surveyed were located in areas of slight labor surpluses. In addition, these plants had segregated units or sections for Negroes, and the number and kinds of production jobs open to colored workers were definitely limited. Aircraft, as a clean, light industry, hired a lesser proportion of Negro workers than all war industries in these Southern cities; but even in the case of heavy industries, the proportion of Negroes was much less than their percentage in the total population. As in aircraft, this was due chiefly to occupational limitations, continuing discrimination against Negro women, and the practice of segregated work arrangements.

4. In considering these two plants, it must be remembered that both draw their workers from the two Kansas Cities and that Kansas City, Mo., is much larger than Kansas City, Kans.

5. Another factor, of course, is that the labor market in St. Louis is one of substantial labor surplus, similar to New York City.

6. The two Douglas plants in Oklahoma have Negro production workers.

7. Negro employment was delayed at this plant. By the summer of 1944, however, there were over 2,000 Negro workers. About 750 of them received wages of $1.00 an hour or more.

8. The developments at Bell in Atlanta were similar to those at North American at Dallas. Negro employment was delayed, but by the summer of 1944 there were 1,500 colored workers distributed as follows: 30 per cent unskilled, 25 per cent semi-skilled, 20 per cent assembler trainee, and five per cent skilled. In the fall of 1944, the Bell Aircraft Company opened its paid training program to Negroes.

The Rôle of Labor Unions

In order to appreciate the rôle of labor unions in influencing racial patterns of employment in aircraft, it is necessary to understand their position in the industry. With a few notable exceptions, such as Boeing at Seattle, employment was well advanced before the unions had bargaining rights; few aircraft factories, even today, have closed shop agreements. This means that management usually established the patterns of Negro exclusion, and that where management was successful in initiating or encouraging Negro employment and upgrading, it did so in the face of worker opposition, which was inevitable once white labor had come to have a vested interest in certain types of employment. It was inevitable also that, in a situation such as this, labor unions were much more important in encouraging or impeding upgrading than in securing or preventing initial employment opportunities for minority groups. At the same time that management bears the main part of the responsibility for the early exclusion of Negroes, so it deserves most of the credit for the initial relaxations of the color bar.

In a situation of this sort, it is misleading to divide aircraft factories on the basis of their union affiliation. Factors which preceded organizational success often determined the extent of Negro employment; this latter development contributed greatly to the degree of enthusiasm with which the union approached the matter of Negro employment and upgrading. Despite the presence of the Machinists, Lockheed-Vega initiated the integration of Negroes on the West Coast. At the California North American plant, the UAW-CIO, which was probably in a stronger position than the Machinists at Lockheed, did little more than give lip service to its non-discrimination pledge in the summer of 1941. Once Lockheed had introduced Negroes, the local Machinists went along and actually took some colored workers into its membership. (Later it stopped doing so, because of the International's ritual.)[9] Once management at North American had introduced Negro workers, the union went into action on the matter; but it did not take the initiative. That was supplied by government and applied to management; results were obtained when there was a change in the personnel department.

9. Cf. the present writer's "Recent Events in Negro-Union Relationships," loc. cit., note 27, p. 243.

The Machinists' unions have actively opposed the employ-
ment or upgrading of Negroes, *where they felt that management was
prepared to go along with such a policy*.[1] In several areas the
Machinists have bowed to the inevitable, and in most instances
they have issued work permits, cleared, or attempted to organize
Negroes in auxiliaries.[2] At the Consolidated plant in San Diego,
Calif., the union accepted the employment of Negro produc-
tion workers once management initiated it. The fact that two
of the plants which hire large numbers of Negroes in a variety of
occupations, Pratt & Whitney in Kansas City and Lockheed-
Vega in Southern California, have bargaining agreements with
the Machinists indicates that where management has been firm, the
union has gone along. In some instances the Machinists have
pressed for segregated eating or rest facilities. Recently they
insisted upon such a pattern in the cafeteria at the Pratt &
Whitney plant; the Negro workers boycotted the segregated facil-
ities and organized to push for full membership in the union. In
contrast to the UAW-CIO, there are no evidences of the Machin-
ists' locals ever taking the initiative, or actively pressing manage-

1. The developments at Vultee in Nashville present a good example of
this relationship. "In Vultee's Nashville, Tenn., factory, the Machinists
have a closed-shop contract, and Negroes have had difficulty obtaining
employment even as janitors." Northrup, op. cit., p. 207. Management
shared the union's feelings. On February 6, 1941, G. S. Hastings, Manager
of Industrial Relations at the Nashville plant of Vultee, wrote the local
N. A. A. C. P. as follows: "We do not now believe it advisable to include
colored people with our regular working force. We may at a later date be
in a position to add some colored people in minor capacities, such as porters
and cleaners."
    In the spring of 1942, there were no training courses in Nashville to
equip Negroes for jobs in the Vultee Aircraft Plant; there were, however,
approximately 1,500 Negro men and 1,500 Negro women in the city who
could have met the requirements for training and placement. Vultee employed
about 20 Negro janitors out of a total of 4,000 workers. The International
Association of Machinists was recognized as sole collective bargaining agent
for all production workers in the plant, and about 90 per cent of these workers
belonged to the union. Since at that time the union did not have a closed
shop, it stated that it was not responsible for the hiring policies of manage-
ment; its leadership did, however, reflect management's fears that Negro
production workers would not be tolerated in the plant. It was obvious at
this time that management did not intend to train or employ Negro production
workers.
    2. Examples of this are found at Pratt & Whitney in Kansas City,
Boeing at Wichita, and Curtiss-Wright at St. Louis. In each of these plants
the Machinists have bargaining rights and Negroes are relegated to auxiliary
unions.

ment to expand employment opportunities for Negroes, or working to abolish patterns of segregation. In one case, at the Boeing plant in Wichita, a local readily agreed to a non-discrimination clause in its recently negotiated contract.

As far as can be discovered, UAW-CIO local unions in aircraft have never sponsored management's discriminatory practices or openly proposed any of their own. At Brewster on Long Island, at Wright in Cincinnati,[3] and in some other plants UAW has pressed for the upgrading of colored workers, and in most areas where it had a contract, the UAW contributed toward the advancement of Negro workers and breaking down patterns of segregation. Because of the delayed negotiation of membership-maintenance agreements and the general absence of closed-shop contracts, the union has not been in a position to do much more in aircraft plants. In contrast to the Machinists, the UAW-CIO unions have always been open to Negroes, who are accepted as first-class members, and, even in some of the Southern plants, participate fully, often actively, in the affairs of the union.[4]

CONCLUSION

The history of aircraft illustrates clearly that when economic necessity and governmental pressures require the introduction of minorities into new types of work, it can be achieved. Aircraft

3. On D-Day the huge Wright plant at Cincinnati was almost completely shut down. The occasion for this work stoppage was the white workers' protest against the transfer of seven Negro workers into the Center Shop as machine operators. This hate-strike was broken only after the plant's management-union committee issued a strong work-or-be-fired order. Both management and union officials were firm in insisting that Negroes be retained in their new jobs. Shortly after the strike was settled, the number of Negroes in the Center Shop increased from seven to twenty-one. "At least three factors seem to be of importance in the precipitation of the strike. To begin with, management announced that Negroes would be assigned to the new jobs on a given date; but did not plan any program of education of the white employees. This gave an opportunity for those who wished to promote discord to get to work. Further, there has been for some time a sizeable faction of white workers within the union (Local 647, UAW-CIO) who are disgruntled over the power held by Negroes in the organization and who have wished to discredit it. It is also alleged by the UAW that representatives of the United Mine Workers catch-all, District 50, have been seeking to gain control of the plant and had not hesitated to exploit the race issue." *Monthly Summary of Events and Trends in Race Relations*, July, 1944, p. 4.

4. At the Dallas North American plant, for example, the UAW-CIO has bargaining rights and accepted colored workers freely; there were Negro stewards and three Negroes were recently elected delegates to the international convention.

illustrates the strategic position of management in effecting relaxations in the color caste system in employment. At the same time, variations in the degree of Negro utilization from area to area and from establishment to establishment show that the most important single factor in bringing about the employment and upgrading of minorities is the degree of tightness in the labor market.

The industry also illustrates that, given economic necessity, relaxations in traditional bars to Negro employment are most easily and extensively achieved in industrial centers outside the South, where the color caste system is least firmly entrenched. An early evidence of this fact was afforded by the smaller amount of resistance to opening defense training in aircraft to Negroes in areas where there were non-segregated schools. The development of Negro employment in the industry, with the final result that the largest proportion of colored workers are in the engine branch, supplies another evidence of the importance of the occupational caste system. Processes in aircraft engine production are similar to those in the engine branch of the automobile industry, and it had been traditional to employ Negroes in this phase of the latter industry, whereas it had not been traditional to use them in sheet-metal or machine shop work.

Aircraft illustrates plainly that when management develops a comprehensive and definite plan for integrating Negro workers, the desired results can be achieved. This does not mean that there was no hostility to the employment and upgrading of Negroes on the part of white workers in aircraft, or that craft unions have not been anti-Negro. It does mean that management often exaggerated this opposition and used it to justify a disinclination to act. The oft-repeated statement that white and colored labor will not work together has been disproved by the experience of aircraft production. Had the industry sought guidance it would have found it in the long and successful experience of iron and steel, shipbuilding, meat packing, tobacco and other industries where Negroes and whites have worked together for many years.

The experience of the aircraft industry has also shown that segregated work arrangements are wasteful of labor resources. There had not been anything like full utilization of Negro labor in a single aircraft assembly plant where Negroes worked in separate shifts, building, or units. Nor has it been possible in tight

labor markets to secure a steady flow of manpower in any plants where certain jobs have been assigned exclusively to Negroes.

The aircraft industry has not afforded Negroes full and equal job opportunities; it has, however, broken down earlier exclusionist patterns in many individual plants. In the process of doing this it has established racial occupational patterns which its leaders once said were impossible. It has successfully used tens of thousands of Negroes in new types of production jobs. In view of the probable extreme postwar contraction of the industry, it is doubtful if it will afford many job opportunities for Negroes in the peace-time economy. Yet some colored workers will retain a place on the assembly lines of aircraft plants.[5]

5. For the basis of this conclusion, see the present writer's "The Employment of Negroes in United States War Industries," International Labour Review, L (August, 1944), pp. 155-9.

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AMERICAN COUNCIL ON RACE RELATIONS.

ABSOLUTE OR RELATIVE RATE OF DECLINE IN POPULATION GROWTH?

Economics is to a large extent a belated rationale of changes in the environment; we are always somewhat behind times. An illustration of this is our attempt to find a proper place for population changes. Because of the multi-sided interrelations of these changes, this is a very difficult and elusive problem. That makes it all the more necessary to clear away certain unnecessary disagreements — unnecessary because their very dissection dissolves them.

The assumption that the Great Depression involved more deep-seated and secular difficulties than usual depressions resulted in a greater emphasis on population movements than they had ever received before. The declining rate of growth became especially important in explanations which saw the main problem in a lack of investment outlets and/or an over-supply of savings.[1] As early as 1931 Ernst Günther argued that population growth used up about one-half of total capital formation, and that a large population requires not only absolutely but relatively more capital than a small population.[2] Similarly, August Lösch concluded that

1. "Classical" theory considered population growth favorable to investment, since it would keep down the rise in wages and thus facilitate larger profit. See, for example, John Stuart Mill, Principles of Political Economy, Book IV, Chapter III, Section I. According to Pareto, "since personal capital has its cost of production, just as other forms of capital do," the growth of population "absorbs savings which might otherwise be put to different use; it therefore affects the rate of wealth accumulation and the level of well being." Joseph J. Spengler, "Pareto on Population," this JOURNAL, August, 1944, p. 576.

2. His conclusion, based on the law of diminishing returns, is stated as follows: "Soll bei zunehmender Bevölkerung keine Verarmung eintreten, so genügt es nicht, wenn das Nationalkapital im gleichen Masstab wie die Bevölkerung wächst, sondern das auf den Kopf kommende Kapital muss entsprechend der Bevölkerung, das Nationalkapital also im quadratischen Verhältnis dazu zunehmen . . . Während also der Geburtenüberschuss von rund 800,000 in der Vorkriegszeit eine jährliche Kapitalneubildung in Höhe von 7,5 Milld. notwendig machte, um den bisherigen Lebenstandard gerade behaupten zu können, genügten bei dem kaum noch halb so grossen Geburtenüberschuss des Jahres 1928 bereits 3,36 Milld. für den gleichen Zweck." "Der Geburtenrückgang als Ursache der Arbeitslosigkeit?", Jahrbücher Für Nationalökonomie und Statistik, June, 1931, pp. 932-933, 961-963.

the demand for savings springing from population increase may absorb half of the supply.[3]

Independent investigations in the English-speaking countries came to similar conclusions. Both Lord Keynes[4] and R. F. Harrod[5] found that the expansion of population in the nineteenth and early twentieth centuries accounted for nearly half of England's home investment, and for considerably more than half of the additional overseas investment which was made possible by the increase of overseas consumers served by the English economy. Nearly one-half of the capital formation would not have been required, if the same improvements in the standard of living and the same lengthening of the production period had not been accompanied by any population growth.[6] In the United States, Alvin H. Hansen, Sumner H. Slichter,[7] and Alan Sweezy[8] — among others — found

3. Bevölkerungswellen und Wechsellagen, Jena, 1936, p. 45.

4. Galton Lecture, delivered before the Eugenic Society on February 16, 1937; reprinted in the Eugenics Review, April, 1937. As early as 1924, Keynes had estimated that England's growing population absorbs about one-half of the national savings. Monetary Reform, New York, 1924, pp. 35–36. In The General Theory of Employment, Interest and Money, New York, 1936, p. 307, the growth of population heads the list of factors which during the nineteenth century established "a schedule of the marginal efficiency of capital which allowed a reasonably satisfactory average level of employment to be compatible with a rate of interest high enough to be psychologically acceptable to wealth-owners." Both J. R. Hicks (Economic Journal, June 1936, p. 251) and Mabel F. Timlin (Keynesian Economics, Toronto, 1942, pp. 148–151) found population to be Keynes' strongest card.

5. According to Harrod, "the increase of population has provided one of the most important sources of demand for fresh capital. . . . If the total national capital were assessed as four times annual income, the nineteenth century rate of increase would provide by itself a demand for the utilization of savings equal to five per cent of income. This might well absorb half of the available supply. When the increase of population ceases, this source of demand will come to an end." "Modern Population Trends," The Manchester School, Vol. X, No. 1, 1939, pp. 18–19.

6. Much lower estimates were presented before the Colwyn Committee in 1927, but even it concluded that by 1941 the growth of population would absorb only one-sixth of the savings it had absorbed during the later 1920's. Report of the Committee on National Debt and Taxation, London, 1927, pp. 243–244. Gustav Cassel estimated that population growth accounted for about one-third of the demand for savings. On Quantitative Thinking in Economics, Oxford, 1935, pp. 148–149.

7. "In the past, much of the demand for investment funds has been created by the increase in population. The decline in the growth of population is likely to have profound repercussions upon our economy. . . ." "Business Looks Ahead," Atlantic Monthly, November, 1939, p. 595.

8. "Secular Stagnation?", Postwar Economic Problems, ed. by S. E. Harris, New York, 1943, p. 77.

similar relationships. According to Hansen, "the growth of population in the last half of the nineteenth century was responsible for about forty per cent of the total volume of capital formation in western Europe and about sixty per cent of the capital formation in the United States."[9] Even if these estimates are only supposed to suggest very roughly the proportions involved, nevertheless "it is a plain fact that a perfectly enormous amount of capital was absorbed in the nineteenth century for no other reason than the tremendous rate of population growth."[1]

Whatever we may think about these estimates and the conclusions drawn from them, even those who made them will now admit that some of the logic behind them is faulty and that they are based on assumptions which should be brought into the open. But that is not our task now.[2] Here we only want to examine two prevalent criticisms against the attempt to apply the declining rate of population growth in the explanation of the Great Depression. Furthermore, the discussion is limited to the short-run cyclical effects of that decline, and does not deal with the long-run secular effects.

The first criticism under discussion is based on the finding that the rate of population increase started to decline as early as 1850, so that "if the rate of population increase had been of controlling importance, we should have had a sharply declining rate of increase in production as early as 1870, with a continuing downward trend to the present time. But indexes of aggregate production ... do not show any declining trend during this period. A factor which does not show results until after it has been operating for 60 years can hardly be regarded as of 'dominating importance.'"[3] In the literature familiar to the writer, this objection was first made by Wilhelm Röpke in 1936. Discussing the population decline, he thinks it "impossible that this can have acted as a cause of the present depression, since it is obvious that the spatial and demographic restrictions on expansion have existed for decades without

9. Presidential Address at the Fifty-First Annual Meeting of the American Economic Association, December 28, 1938; reprinted in the American Economic Review, March, 1939, p. 8.

1. A. H. Hansen, Full Recovery or Stagnation, New York, 1938, p. 313.

2. For an attempt to do so, see the author's unpublished Ph. D. thesis, Some Effects of Population Changes on Economic Development and Business Cycles, Harvard University Library.

3. Harold G. Moulton and Associates, Capital Expansion, Employment, and Economic Stability, Washington, 1940, p. 167.

having prevented a fully fledged boom several years ago."[4] The point was repeated time and again. Thus, in 1941, James W. Angell writes in his refutation of the "stagnation" thesis that "the retardation in the rate of population growth which has been cited is genuine enough, but it began soon after the middle of the last century, not in 1929."[5] And as late as 1943, Harold G. Moulton argues "that the American frontier disappeared more than a generation ago and that the rate of population growth began to decline in the United States as early as 1850."[6]

The misunderstanding involved in this objection is based on a failure to differentiate between the *absolute* and the *relative* (or percentage) rate of population increase. The figures given above refer to the relative rate of population increase, and the conclusions are based on the fact that this rate began to decline in the middle of the nineteenth century (see chart). As such, the criticism does not meet the arguments involved in Professor Hansen's analysis. For the proponents of the view that population growth played a rôle in the 1930 depression based it expressly on the point that what is relevant is not the relative, but the absolute, rate of change.

As early as 1929, Paul Mombert had emphasized that "für die Beurteilung der Zusammenhänge von Bevölkerung und Wirtschaft kommt es aber nicht auf die Zuwachsrate, nicht auf das relative, sondern ganz allein auf das absolute Wachstum der Bevölkerung an."[7] Two years later, Curt Nawratski in his analysis of the relation between population and housing needs finds that it is the absolute rates which are important.[8] This was stressed time and again by Professor Hansen. "It should be noted that

4. Crises and Cycles, London, 1936, p. 4.
5. Investment and Business Cycles, New York and London, 1941, pp. 261-262.
6. The New Philosophy of Public Debt, Washington, 1943, p. 23. Similarly, Professor Harley L. Lutz complains that the originators of the mature economy doctrine "seized upon trends which had long been evident . . . The birth rate had been falling for decades." "A Simple Recipe for Prosperity," The Tax Review, May, 1944. The objection has also crept into more popular literature. In its New England Letter of May 31, 1944, The First National Bank of Boston finds that the "deficit-financing theory rests upon false premises," since, as far as the population factor is concerned, "the peak in our population growth was reached during the decade ended in 1850."
7. Bevölkerungslehre, Jena, 1929, p. 273.
8. Bevölkerungsaufbau, Wohnungspolitik und Wirtschaft, Berlin, 1931, p. 44.
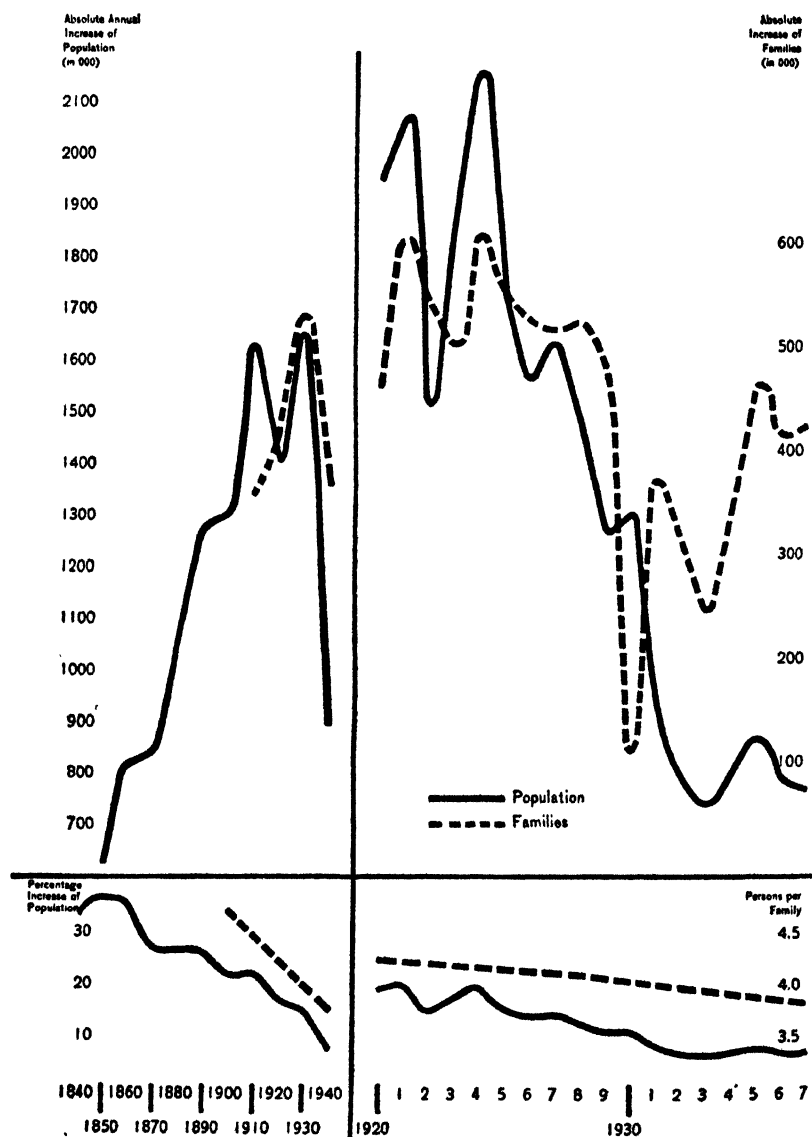
Source: Statistical Abstract of the United States; Economic Almanac

POPULATION GROWTH IN THE UNITED STATES, 1840-1937

'rate of increase' means absolute, not percentage rate of increase. It is the absolute increment of growth with which we are concerned when we apply the principle of acceleration."[9] Again, "it is important to note — a point which I have continually stressed — that it is the *absolute increment* of growth that is significant, *not the percentage rate of growth.*"[1] Since he repeated this whenever he related population to investment,[2] it is somewhat difficult to understand how changes in the relative rate could ever have been considered a criticism.

The fact that the relative rate of population increase started to decline in the last century cannot be used as an answer to an argument based on the fact that the absolute rate started to decline about 1925 (see chart). The criticism might have carried weight, had it explained why the absolute rate should not be considered the relevant one. Unfortunately for the controversy, the discussion never got this far, and the whole process was never really thought through. We must, therefore, ask ourselves whether it is the relative or the absolute rate which is significant.

The reason for emphasizing the absolute increment of population growth with respect to the 1930 depression lies in the working of the acceleration principle. The relation of population growth to investment is, in part, by way of its effects on consumption patterns. The tremendous increase in population had a double-barrelled effect on expenditure channels: on the one hand, it directed consumer demand toward goods which seem to require especially heavy capital outlays; on the other hand, it kept up the propensity to consume, so that it minimized the investment required to keep the economy at a full-employment level.[3] Both processes relate population to investment through the former's effects on consumption, and the relation of consumption changes

9. Full Recovery or Stagnation, New York, 1938, p. 48.

1. Fiscal Policy and Business Cycles, New York, 1941, p. 364. Professor Hansen may well agree that, in the light of the resultant confusion, it was unfortunate that both these statements were placed in footnotes.

2. "The point that I especially wish to stress . . . is the great importance of the amount of growth, the absolute amount of growth." T.N.E.C., Proceedings, Vol. III, May, 1939, pp. 341–342. See also his "Extensive Expansion and Population Growth," Journal of Political Economy, August, 1940, p. 585; and "Comments on Terborgh's Address," National Industrial Conference Board, November 23, 1943, in which Professor Hansen expressly corrects Terborgh's use of the percentage rate of increase.

3. For statistical and theoretical evidence, see H. A. Adler, op. cit., Chapter III.

to resultant investment changes is indicated by the acceleration principle.[4] But when we apply this principle, we are concerned with the absolute increment of growth in consumption, not the relative changes. Since this point has been overlooked by the critics and not been stressed enough by the proponents, further explanation may be useful.

Assume an industry to be making full use of its machinery and labor in the production of a certain consumers' good, and that suddenly the demand for the commodity is increased by a certain amount. Since the existing facilities are being used at full capacity — as assumed — the industry must employ new machinery and labor. The amount of this new producing capacity is determined by (a) the amount of the increased demand for the consumption good, and (b) the technical aspects of the productive method. The size of the new demand for producers' goods is determined by the absolute increase in the demand for the consumers' goods, and is not related to the size of the existing production facilities. The ratio of the new increase in demand to the old demand is a completely irrelevant consideration.

This process is not changed very much if we drop the assumption of the industry making full use of its productive capacity and replace it by the assumption of under-employment. In that case, the increase in demand for the consumers' good results first in an increased use of formerly idle capacity, and only afterwards in an increase in total capacity. But again, the decrease in under-utilization and the increase in new capacity is determined by the absolute increase in the demand for the consumers' good. It is therefore not surprising that a study of entrepreneurial expectations in the housing industry reveals that expectations as to future construction are determined by the absolute increases in demand in the course of the cycle, while hardly any attention is paid to the percentage changes.[5]

Because of its vagueness, the concept "rate of population change" has led to much misunderstanding. In the first place, precision is required in indicating whether the absolute or relative

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4. Thus, R. A. Musgrave and B. Higgins find that "inasmuch as growing population is tantamount to growing consumption, the 'acceleration principle' argument suggests that a mere decline in the *rate* of population growth will lead to a fall in investment." "Deficit Finance — The Case Examined," Public Policy, ed. by C. J. Friedrich and E. S. Mason, Cambridge, 1941, p. 147.

5. Op. cit., Chapters IV and V.

rate of change is being referred to. We have seen that in the relation between investment and population it is the absolute rate of change in population growth which is significant for business cycle analysis. This rate started to decline in 1925, approximately.

At this point, however, another difficulty arises. The concept "population" is not as clear as it seems at first sight. As a result, the use of the declining absolute rate of population growth in an explanation of the Great Depression is criticized on the ground that "the rate of growth in the number of families did not drop significantly between the middle and late 'twenties and the middle 'thirties,"[6] i.e. "it relates to individuals rather than to families."[7]

This argument is based on the claim that the consuming unit is the family, not the individual. The Machinery and Allied Products Institute, for example, emphasizes the necessity of differentiating between the growth of population and growth in the number of families, because "the future demand for housing, and for capital goods used in its production, is conditioned, in so far as it depends on population changes, largely by the trend in the number of households."[8] The decline in the growth of the number of families did not come quite so soon or so rapidly as the decline in the growth of population, since the size of families was shrinking. But if it is true that five families imply a greater demand for housing than two families, does it not also follow that a family of five will demand more housing than a family of two? Indeed, the Institute states in a footnote that "the decline in the average number of persons per family influences primarily the average size of the dwelling units built, rather than their numbers."[9]

6. Richard Bissel, "Postwar Private Investing and Public Spending," *Postwar Economic Problems*, ed. by Seymour Harris, New York, 1943, p. 87. As the chart indicates, this statement is somewhat misleading. For the absolute rate of growth in the number of families started to decline in 1925, remained on a relatively high level till 1929, but then fell very rapidly. Thus, while the total number of families in the five-year period from 1921 to 1925 increased by 2,881,000, the increase in the five-year period from 1930 to 1934 was only 1,446,000 families. The rate of growth had fallen to nearly one-half. Calculated from data presented by the National Industrial Conference Board, *Economic Almanac*, 1944–1945, p. 21.

7. John H. Williams, "Deficit Spending," *American Economic Review*, Supplement, February, 1941.

8. *Saving and Investment in the American Enterprise System*, Chicago, 1939, pp. 17–18.

9. Ibid. Similarly, Herbert S. Swan points out that "the size of dwelling required by a family expands with the number of persons per family." *The Housing Market in New York City*, New York, 1944, p. 117.

From the point of view of total housing demand, both the number of dwellings and their size must be considered. It follows that both the number of families and their sizes are relevant. Since changes in population include both changes in the size of families and in the number of families, they are the significant factor.

Whatever valid objections there may be to using population changes in an explanation of the Great Depression, the fact that the relative rate of population growth began to decline in the last century is not one of them. It is the absolute rate which is decisive in this connection.

<div align="right">HANS A. ADLER.</div>

NEW YORK CITY

CONSUMPTION IN FIXED PROPORTION

In the mathematical theory of value one may operate[1] from the point of view of the utility index u leading to the equations $\mu p_i = u_i = \partial u / \partial x_i$, $i = 1, 2, \cdots, n$, or from that of the demand equations $x_i = f_i(\pi_1, \cdots, \pi_n)$, where $\pi_j = p_j / M$ and M is the total budget. In the former case we have the prices expressed in terms of the quantities of goods, since $\mu = \Sigma u_i x_i / M$ and u_i are functions of the x's; in the latter case we have the quantities of goods expressed in terms of the prices p. Ordinarily one may pass at will from either set of equations to the other, at least in theory, by solution. The consistency conditions

$$\sigma_{rs} = \frac{M}{x_r x_s} \left(\frac{\partial x_s}{\partial p_r} + x_r \frac{\partial x_s}{\partial M} \right) = \frac{M}{x_r x_i} \left(\frac{\partial x_r}{\partial p_s} + x_s \frac{\partial x_r}{\partial M} \right) \quad (1)$$

hold between the demand functions.

There are two extreme cases of the theory in which one of the Jacobians

$$\frac{\partial(\pi_1, \cdots, \pi_n)}{\partial(x_1, \cdots, x_n)} \quad \text{or} \quad \frac{\partial(x_1, \cdots, x_n)}{\partial(\pi_1, \cdots, \pi_n)},$$

which are reciprocals each of the other, vanishes. If the first one vanishes, the equations for the prices (utility theory) cannot be solved for the goods; in this case $U = 0$ and we have what I have ventured to call a set with perfect substitution. If the second Jacobian vanishes (i.e. U becomes infinite), the demand equations cannot be solved for the prices and we have indeed a functional relationship $\Phi(x_1, \cdots, x_n) = 0$ between the quantities of goods. Speaking geometrically, the first case ($U = 0$) leads to indifference surfaces with ∞^{n-1} points but only ∞^{n-2} tangent planes, and the second ($U = \infty$) to those with only ∞^{n-2} points but with ∞^{n-1} tangent planes. In the first case there is generally no equilibrium within the region, though exceptionally there may be an indeterminate (neutral) equilibrium; in the second case the equilibrium is generally what would be called over-determined, that is, the same quantities of goods would be purchased despite certain variations in price.

1. The notation will be that of my recent note, this JOURNAL, November, 1944, pp. 134–140, or J. R. Hicks, Théorie Mathématique de la Valeur en Régime de libre Concurrence, Paris, 1937.

The simplest case of a functional relationship between the goods is that where two of the goods are necessarily consumed in fixed proportion, let us say $x_2 = cx_1$, where c is independent of the price ratios $\pi = p/M$. To avoid the abstraction of mathematical generalities one may take a simple, if trivial, example where there are only two goods. If we had indifference curves as quadrants of circles of radius r convex toward the origin with centers on the line inclined at 45° to the x_1 and x_2 axes (which we shall call x and y axes for this illustration), we might take the utility index in some such parametric form[2] as

$$x = u - r \cos \theta, \quad y = u - r \sin \theta, \quad 0 < \theta < \pi/2.$$

A geometric diagram shows that the demand functions are

$$x = \frac{M + r\sqrt{p_x^2 + p_y^2}}{p_x + p_y} - \frac{rp_x}{\sqrt{p_x^2 + p_y^2}}, \quad y = \frac{M + r\sqrt{p_x^2 + p_y^2}}{p_x + p_y} - \frac{rp_y}{\sqrt{p_x^2 + p_y^2}}.$$

Clearly, if r be allowed to approach zero, the quantities of goods consumed tend to become equal at $x = y = M(p_x + p_y)^{-1}$ and at the limit $r = 0$ one cannot solve for p_x and p_y in terms of x and y.

The elasticities of substitution may be calculated from (1) as

$$\sigma_{xx} = \frac{-rp_y^2}{\sqrt{p_x^2 + p_y^2}}, \quad \sigma_{yy} = \frac{-rp_x^2}{\sqrt{p_x^2 + p_y^2}}, \quad \sigma_{xy} = \frac{rp_x p_y}{\sqrt{p_x^2 + p_y^2}}.$$

The values of σ_{xx}, σ_{yy} are negative, as is usual in conditions of stable equilibrium, and the value of σ_{xy} is positive, i.e. the goods are substitutes according to Hicks' definitions. If r now approaches 0 as a limit, all three of the elasticities converge to zero. What then shall we say of the limit $r = 0$, when the goods are necessarily consumed in equal quantities? As $\sigma_{xy} = 0$ shall we say that the goods are independent? Or as σ_{xy} has always been positive shall we say that the goods are substitutes? Or shall we agree with Hicks that

2. If one prefers an explicit form one may use

$$u = \frac{x+y}{2} + \sqrt{\frac{r^2}{2} - \frac{(x-y)^2}{4}}$$

In parametric form

$$u_x = \frac{\cos\theta}{\cos\theta + \sin\theta} \; ; \; u_y = \frac{\sin\theta}{\cos\theta + \sin\theta} \cdot \theta_x = -\theta_y = \frac{1}{r(\cos\theta + \sin\theta)}$$

$$u_{xx} + u_{yy} = -u_{xy} = \frac{-1}{r(\cos\theta + \sin\theta)^3}.$$

One may thus easily examine the behavior of U and its cofactors as r approaches 0.

σ_{xy} is necessarily negative and hence the goods are complementary?

Before answering the questions let us turn to the more general case of a three-good market with $x_2 = cx_1$. The budget equation

$$M = p_1 x_1 + p_2 x_2 + p_3 x_3 = (p_1 + cp_2)x_1 + p_3 x_3$$

certainly suggests that the quantities be functions of

$$\pi_0 = (p_1 + cp_2)/M \text{ and } \pi_3 = p_3/M.$$

Suppose we consider demand equations

$$x_1 = \varphi(\pi_0, \pi_3), \quad x_2 = c\varphi, \quad x_3 = \frac{M}{\pi_3} - \frac{\pi_0}{\pi_3}\varphi.$$

The three consistency conditions (1) are satisfied identically irrespective of the function φ. Hence the general values of σ may be obtained

$$\sigma_{11} = \sigma_{12} = \sigma_{22} = \frac{1}{\varphi^2}\left\{\frac{\partial\varphi}{\partial\pi_0}(1 - \pi_0\varphi) - \pi_3\varphi\frac{\partial\varphi}{\partial\pi_3}\right\}.$$

If σ_{11} does not vanish because of the fact that it is proportional to U_{11}/U and U is becoming infinite faster than U_{11} when the case of consumption in fixed proportions is regarded as a limit, we should expect by continuity that σ_{11} would be negative, and that σ_{12} should therefore also be negative, and that x_1 and x_2 should be complementary. There would, however, be the possibility that φ should happen to be so chosen that

$$\frac{\partial\varphi}{\partial\pi_0}(1 - \pi_0\varphi) - \pi_3\varphi\frac{\partial\varphi}{\partial\pi_3} = 0$$

and in that case[3] $\sigma_{11} = \sigma_{12} = \sigma_{22} = 0$. There seems to be no reason why σ_{12} should not be zero in exceptional cases when $n = 3$, as it is always when $n = 2$. Probably in those cases we should call the goods x_1 and x_2 independent, and say that if two goods were consumed in fixed proportions they must be independent or complementary.

An example may throw light on the meaning of the condition $U = 0$. Consider $u = xy + xz + yz + z^2$,

$$U = \begin{vmatrix} 0 & x+z & x+y & x+y+2z \\ x+z & 0 & 1 & 1 \\ x+y & 1 & 0 & 1 \\ x+y+2z & 1 & 1 & 2 \end{vmatrix} = 0,$$

3. The general integral is $1 - \pi_0\varphi = \pi_3 C(\varphi)$ where C is any function.

$$U_{xx} = U_{yy} = U_{zz} = U_{xy} = -U_{xz} = -U_{yz} = 2u.$$

As $n = 3$ we should have $U < 0$ if we were considering approaching the condition $U = 0$ through a series of stable equilibria. Thus σ_{xx}, σ_{yy}, σ_{zz} would be negative and also σ_{xy}, whereas σ_{xz} and σ_{yz} would be positive. We should therefore say that x and z or y and z were substitutive but x and y were complementary. In the limit we should expect σ_{xz} and σ_{yz} to be positively infinite and σ_{xy} to be negatively infinite. If then the infinite values were to be taken as representing the extreme condition, one would have perfect substitution or complementarity; but it is certain that neither x and z nor y and z are perfect substitutes in the usual sense, and it might therefore be doubted whether x and y were best called perfect complements.

As a matter of fact, the determinant $|\sigma_{ij}|$ formed of the elasticities of substitution is negative definite except in degenerate cases[4], i.e.,

$$\sigma_{11} < 0, \quad \sigma_{11}\sigma_{22} - \sigma^2_{12} > 0, \text{ etc.}$$

Thus in a certain sense the extreme values of σ_{12} must be $\pm \sqrt{\sigma_{11}\sigma_{22}}$. There is a general theorem that any two-rowed minor of the adjoint of a determinant is (except for sign) the product of the determinant by its second minor formed by striking out the rows and columns which correspond to the rows and columns in the two-rowed minor[5] of the adjoint determinant. Thus for $n = 3$

$$\begin{vmatrix} U_{11} & U_{12} \\ U_{12} & U_{22} \end{vmatrix} = U \begin{vmatrix} 0 & u_3 \\ u_3 & u_{33} \end{vmatrix}$$

$$\begin{vmatrix} U_{11}/U & U_{12}/U \\ U_{12}/U & U_{22}/U \end{vmatrix} = \frac{-u_3^2}{U}.$$

4. See Hicks, op. cit., p. 18. On p. 16 Hicks remarks that for x_r and x_s consumed in fixed proportions $\sigma_{rt} = \sigma_{st}$ for all values of t. "Parmi ces conditions, on a $\sigma_{rs} = \sigma_{rr}$, de telle sorte que σ_{rs} est nécessairement négatif dans ce cas (comme assurément il le sera). Mais il n'y a aucune raison logique que $\sigma_{rr} - \sigma_{rs}$ ne soit pas, dans certaines éventualités, positif; de telle sorte que le cas des proportions fixes n'est pas nécessairement le cas extreme de la complémentarité." In respect to the first sentence it appears that σ_{rs} is not necessarily negative but may be zero. In respect to the second it should be remarked that the relation of complementarity being a mutual one between two goods, an asymmetric expression like $\sigma_{rr} - \sigma_{rs}$ should have no meaning with respect to it; it is certain that the symmetrical expression $\sigma_{11}\sigma_{22} - \sigma_{12}^2$ cannot be negative.

5. See M. Bôcher, Introduction to Higher Algebra, p. 33.

Except for factors which ordinarily are neither zero nor infinite this determinant is $\sigma_{11}\sigma_{22}-\sigma_{12}{}^2$ and its value $-u_3{}^2/U$ would appear to be infinite as U becomes zero and to be zero as U becomes infinite. Thus for two goods consumed in fixed proportions we should expect σ_{12} to be $-\sqrt{\sigma_{11}\sigma_{22}}$ as it turned out to be, but for a set with perfect substitution we should expect that though $U_{11}U_{22}-U_{12}{}^2$ were zero, $\sigma_{11}\sigma_{22}-\sigma_{12}{}^2$ would become infinite rather than zero.

<div align="right">

EDWIN B. WILSON.

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THE RELATIONSHIP OF TOTAL OUTPUT
TO MAN-HOUR OUTPUT: REPLY

In the February, 1942, issue of this JOURNAL, Lawrence R. Klein[1] questioned statistical findings of my article of a year earlier.[2] Since I entered the Navy in early 1942, I have only recently seen Mr. Klein's remarks. It is perhaps a bit late to revive discussion after a lapse of more than three years, but I hope that the findings are of sufficient interest to justify a brief, if belated, reply.

The 1941 article examined Federal Reserve Board production data and Bureau of Labor Statistics employment data for 1933–38, discovered a positive relationship between total output and man-hour output in most industries studied, and, after discussing the effects of technological progress and similar forces, concluded that most manufacturing industries probably operated under conditions of constant or increasing average variable labor returns during 1933–38. Mr. Klein's principal criticisms are:

(1) A positive relationship between total and man-hour output may be merely a mathematical accident resulting from the manner of deriving man-hour output.

(2) Differences in the coverage of Federal Reserve Board and Bureau of Labor Statistics data are lightly dismissed.

Mr. Klein's first criticism is technically correct, but does not apply to the data actually employed. It is true that, if the positive relationship discovered between total and man-hour output were due to a combination of stable employment-hours and fluctuating total output, the positive relationship would not indicate the existence of increasing returns. However, the period examined (1933–38) was one of marked fluctuations of both output and employment hours, and increases and decreases in the former were usually accompanied by increases and decreases in the latter. The article took for granted reader-knowledge of this fact.

·Whether differences in Federal Reserve Board and Bureau of

1. "The Relationship between Total Output and Man-Hour Output: Comment," this JOURNAL, February, 1942, pp. 342–343.

2. "The Relationship between Total Output and Man-Hour Output in American Manufacturing Industry," this JOURNAL, February, 1941, pp. 239–254.

Labor Statistics coverage invalidate the findings depends, first, upon how great the extent of difference is relatively to the extent of overlap; second, upon whether output and employment of firms represented in the extent of difference moved contrary to output and employment of firms represented in the extent of overlap. The fact that the Bureau of Labor Statistics has derived indices of man-hour output in a similar manner perhaps indicates that the statisticians compiling the employment series believe such data to be roughly comparable with the Federal Reserve Board production series. Moreover, even if the extent of difference were fairly substantial, the differences would have to exaggerate production relatively to employment during periods of rising output and exaggerate employment relatively to production during periods of falling output, to distort substantially the statistical findings. Such a series of coincidences is possible, but hardly probable.

It might be pointed out that, when Mr. Klein suggests an alternative method of approach, he appears to confuse increasing returns with an increasing rate of increasing returns.[3]

HENRY M. OLIVER, JR. (LT., USNR)

3. "In order to determine whether or not increasing average variable labor returns existed, it would be necessary and sufficient to show that $\frac{d^2y}{dx^2} > 0$. This would mean that man-hour output was increasing at an increasing rate."

(The above expression of opinion is solely that of the author, and does not in any way reflect opinions of the United States Navy.)

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